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KIRKSTALL ABBEY EXCAVATIONS  
1950-1954

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# Kirkstall Abbey Excavations

1950-1954

## PREFACE

**T**HIS series of excavations has been carried out by members of the staff of the Leeds City Museums assisted by volunteers.

In the first two seasons, the work was directed by Mr. W. V. Wade of Leeds University, but subsequently it has been directed by the writer and his colleagues.

The dig had several objects. It was hoped to add to the very scant written history of the abbey by excavation. It was intended to bring to light some of the small structures of the abbey which had not been planned by St. John Hope and Bilson in their monograph. It was hoped that horizontal structures including floor levels and drains might be dated by their relations with walls of known date, and further that these would allow the recovery of a stratified series of small finds, particularly including pottery. Little is known of the methods used in the trades carried out within the abbey. These include smelting and forging of iron, copper and bronze, plumbing, tanning, the work of the carpenter, mason, potter, weaver, and others. It was hoped that the actual sites of some of these trades might be found. It was finally hoped to recover good medieval material for exhibition at the Abbey House Museum which would help to make the public more conscious of the historical importance of the building.

All these objects have in part been achieved. The uses and alterations in several of the rooms, notably the kitchen and warming house have been shown. These alterations mirror most accurately what is known of the abbey. They all show how successful the abbey was from the beginning and how the first few monks were rapidly augmented. They show how few the abbey housed in its last hundred years before the Dissolution, and such things as meat bones and oyster shells emphasise the laxity of rule in the last days.

Smaller structures of great importance have been brought to light. These include the monastic bath, south of the warming house, the cloister cistern, and the great nearths in the kitchen. They also include the fine tile floor first seen in the refectory in 1953. It is intended to repair and restore all these structures in such a way that they can be left open and visible to the public.

Knowledge of metalwork has been greatly increased by the finding in the cloister of the remains of a small bloomery (which obviously functioned before the cloister was laid out), and by the discovery of a small hearth and crucible, the latter containing

fragments of scrap bronze of at least three different types, in the corner of the kitchen. Quantities of metallic slag have also been recovered from filled-in trenches and lead has been found in great abundance.

Pottery finds have been good. These are fully described by Mrs. J. Le Patourel, and several have been sufficiently complete to allow the vessel to be built up and wholly restored. In addition, a certain amount of bronze and ironwork has been recovered and a very little glass. A few interesting coins have also been found.

Thus the five years' digging has yielded good results and further work is planned for several more seasons.

#### **ADVANTAGES OF SITE**

Kirkstall Abbey has many advantages as a site for excavation. It is still isolated and no modern buildings have encroached upon it. No part of it was altered to make a formal garden as was Fountains in the eighteenth century. It was not dug for treasure by nineteenth century antiquaries, but was left practically untouched until 1890.

Soon after this date, St. John Hope had the walls traced, and considerable restorations were made. Large trees were removed and ivy was stripped from the walls. Unfortunately St. John Hope appears to have been interested in little but the walls, and he records neither floors nor small finds, though it seems certain that he must have seen the refectory tile floor. Occasionally, as in the kitchen, he had a narrow trench dug along a wall to examine the foundations, and this has destroyed the evidence of the age of floors. In the in-filling of such trenches, pottery has been found. Nevertheless, there is very little disturbance of the medieval ground, and it is seldom difficult to separate the more modern trenches. In the restoration work, the walls were covered with scaffolding. The poles were sunk in circular holes whose depth and diameter was approximately two feet. At times these have obscured the succession but, with practice, it is becoming easier to locate and clear them.

All finds are removed to the Abbey House Museum, once the gatehouse of the Abbey. This provides excellent laboratory arrangements practically on the site. The Abbey's accessibility makes it particularly easy to attract help and an experienced group of regular volunteers has provided an excellent labour force.

Kirkstall Abbey stands almost entirely on the valley floor on the north bank of the river Aire. The north precinct wall and the gatehouses stood on the steeply sloping valley side. The valley itself has rocky sides of lower Coal Measure sandstones and coarse grits of the Millstone Grit series. The valley floor is deeply filled with glacial deposits. A typical section in the cloister shows beneath two feet of soil and disturbed deposits, about four feet of firm compact yellowish boulder clay, which contains a certain amount of sand and sporadic pebbles and boulders of local origin.

This clay is impervious and is rigid enough to provide a strong foundation to the abbey walls. Beneath it is several feet of a pervious sandy gravel with smooth waterworn pebbles, slightly cemented with iron oxide. The gravel, too, is compact, and it seems unlikely that the abbey walls would suffer from subsidence. The surface level falls slightly towards the river, the boulder clay thinning and the gravels coming nearer the surface. There is no covering of flood plain material and it is quite clear that the river does not, and has never, flooded the abbey buildings. The river banks are composed of a much softer fluviatile silt, brown where aerated and blue where waterlogged, and there is no evidence that the river has taken any other course than its present one since the end of glacial times. In the Middle Ages, the marshes extended up the Aire valley as far as Leeds, which grew up round the first easy crossing. The profile of the river rises above this point and the stream is rapid enough to prevent flooding. There is a dam just below the abbey which provides a mill race running parallel on the north side. This is marked on the 1711 plan of the Cardigan estates. It is not known whether or not this has a monastic origin.

The average thickness of soil and disturbed ground covering "natural" is about or just under two feet. The latest monastic layers vary from an inch or two below the turf to a foot down, depending on the rate of accumulation of soil since the Dissolution. The uppermost nine inches of boulder clay is usually weathered brown and small finds are often pressed into it. Thus, the stratigraphy of four hundred years is compressed into a foot or eighteen inches. It is, however, fairly clearly marked, and it has not proved difficult to separate the various layers. In places deep trenches have been dug and these, of course, carry medieval fills of many feet thickness.

The main events in the abbey's history seem to have occurred at four periods. The Church and the original conventual buildings were all erected within thirty years—between 1152 and 1182 when Alexander, the first abbot died. Then in the early thirteenth century there were several important additions, including the abbot's house, the infirmary, the guest house and the eastern half of the chapter house. Few changes occurred for well over two hundred years. Then in the mid or late fifteenth century, alterations occurred in the refectory to convert it into a two storey building, a meat kitchen was added and alterations were made in the kitchen, warming house and other rooms. New floors at a rather higher level appear to have been laid in several rooms at this period. The last important event was the Dissolution, and this has left its traces in rough cobbled floors and hearths and in destruction and demolition. Much of the stratigraphy fits in well with the work at these four periods.

## THE EXCAVATIONS

During the first season, the object of the dig was almost entirely exploratory. It was not known what, if anything, lay beneath the turf and it was felt worth while to site an exploratory trench. The position chosen was across a small open courtyard, south of the kitchen, which might possibly have been roofed. It was felt that workshops or storage sheds might be discovered there. The dig was successful. In the early stages a further trench was taken across the kitchen, but it was quickly realised that there was not time to work in the two places. The kitchen trench was quickly filled in and was not opened up again until the fifth season. The kitchen proved most complicated and it was fortunate that we had four seasons' experience to help us with its problems.

The success of the first season prompted the choosing of a similar site for the second. It was known that part of the north side of the courtyard south of the warming house had been covered and the marks of a penthouse roof are still clearly visible on the dormer wall.

The digging of this area brought to light below the later floor levels, a long line of masonry set in a trench. The tracing of this, first thought to be a wall foundation, took two more seasons to complete. It proved to be an overflow soak-away drain from the cloister cistern. It finished very suddenly just before it reached the main drain, though it lay at a lower level. It was probably found that once this drain had reached the glacial gravels, the waters would seep away without trouble.

In the north east corner of this area, south of the warming house, the monastic bath was uncovered. It took another season to confirm its purpose and to date it, for it was not until the third season that a pipe laid in a trench of thirteenth century date, was found to cross the warming house from north to south and enter the corner of the bath, just above floor level. At the time of writing, the bath has been re-excavated and restored and is now visible to the public. The bath contained a great quantity of monastic "rubbish" and provided us with our largest batch of pots.

In the third season, everything pointed to the warming house as the next site to dig. This we dug as a complete room with great success, tracing the soak-away drain across it and finding the lead pipe to the bath. We also cleared fifteenth and thirteenth century floor levels and hearths and found the cross wall of the original east to west frater, though this was not recognised as such at the time.

In the fourth year, two separate problems were tackled. The soak-away drain was sought and found in the cloister, and squares were lifted in the refectory to show up the sequence of alterations

in that building. The soak-away drain led up to the cloister cistern. It also cut through a layer of charcoal which proved to be the sweepings of a small bloomery. This produced iron for the monks before they laid out their cloister.

The refectory dig revealed a fine tile floor laid in the fifteenth century. It also exposed the footings of a staircase in the north-west corner which led up to the upper refectory inserted in the fifteenth century and the foundations of the south wall of the original east to west refectory. This all confirmed St. John Hope's explanation of the refectory lay-out.

The fifth season was devoted mainly to the kitchen and to the uncovering of the great cooking hearths. Once more this work had been suggested in an earlier season. It was a most successful dig, clearing the hearths and also bringing to light traces of bronze working.

Thus, each season has added something to our knowledge of the Abbey and each dig has raised problems whose solution must be left to a subsequent season.

There would still seem to be many more years of worthwhile excavation before we can say that we have completed the archaeological work on the Abbey.

DAVID E. OWEN.

## THE POTTERY

Five years have seen the accumulation of a considerable quantity of pottery at Kirkstall of which a proportion, found in association with Abbey structures, has been datable within fairly wide limits. Early dreams of finding large quantities of closely dated pottery, and perhaps a kiln, within the Abbey precincts have given place to the more realistic task of accumulating small scraps of evidence from each successive dig and building them into a framework that can be modified or enlarged as each new bit of evidence is unearthed. Not all the evidence comes from Kirkstall. Comparative material from neighbouring sites has often made possible the interpretation of Kirkstall pottery and has shown its relationship to broader regional developments.

Broadly speaking, the picture remains much as it looked after the excavation of the warming house in 1952, though the succeeding years have added details, especially for the very early and the very late monastic periods. Short of an extraordinary chance, we cannot hope that the site will yield pottery from any period before the building of the Abbey. So the sequence begins in the last half of the twelfth century with pottery associated with the cloister drain, which ran under the earliest abbey walls, and that found in the foundation trench of the second frater. Both are

of the same type; the first must date to the middle of the twelfth century, the second to some time in the next fifty years or so. The exact date of the re-orientation of the frater will almost certainly never be known. St. John Hope, who is usually reliable, and who had before him architectural evidence which no longer exists, dated it to the second half of the twelfth century on the strength of round-headed windows that largely disappeared in the restoration work carried out at the end of last century. Mr. Alcock was inclined to date it somewhat later on the evidence of two coins found in the make-up of one of the frater floors (see report for 1953). Whichever date is preferred, there is no doubt that the angular-rimmed, gritty pottery found in the cloister and the frater foundation trench was the predominant type over a great part of northern England in the twelfth, and probably for some years into the thirteenth century, for fashions in pottery change slowly, and a given type may linger in out of the way places decades after it has been superseded in others. At Kirkstall it had disappeared by the mid-thirteenth century when the warming house alterations took place, and the same seems to be true at Knaresborough Castle (*Antiq. Journ.* xxxiii, 1953, pp. 211-12).

The characteristics of the type are discussed in the individual reports. The range of vessels so far found includes large cooking-pots, with and without applied thumb-pressed strips; small cooking-pots and large and small bowls. All these are characteristically unglazed, but a small number of glazed sherds of the same kind have been found at Kirkstall, Knaresborough and York. Very occasionally part of a jug in this ware has been found, but these jug fragments form so tiny a proportion of the total that jugs and pitchers of some other material must surely have been in contemporary use. If so they await recognition.

For the thirteenth century we have to rely on the material from below the mortar floor in the warming house. This amounted to parts of cooking-pots, bowls and the neck and rim of one pitcher. The cooking-pots and bowls, taken with analogous finds from other parts of the Abbey buildings, give us a fair idea of the coarse-ware of the thirteenth century. It is strikingly different from contemporary coarse-ware at York or in the East Riding, though it compares closely with such material as is available from the immediate vicinity of Leeds. Cooking pots are still often unglazed, and, in the examples we have, are distinguished from earlier vessels by much thicker walls, and a heavy, rounded rim. Bowls tend to have straight sides and internal glaze, or, in some cases, an internal wash of slip; shallower bowls or pans may have a short horizontal handle springing from below the rim, and the one socketed skillet so far found probably belongs to this century.

The solitary pitcher is less helpful, and it is very difficult to distinguish with any certainty between pitchers and jugs from this and the succeeding century, especially as tubular-spouted pitchers, baluster jugs and other recognised types have so far been completely lacking at Kirkstall. In England generally, the thirteenth century saw the manufacture of the finest medieval pottery and the following century witnessed a decline in craftsmanship and artistic standard. So there is a tendency to ascribe the better quality wares to the earlier, and the technically inferior material to the later period. The dangers of such a rough and ready assessment need hardly be stressed. Some of the larger pitchers found in the filling of the "bath" have been dated to the fourteenth century on account of their general resemblance to the pottery from a kiln at Ashton, but it must not be forgotten that that pottery was itself dated on probabilities only. No fourteenth century pottery from Kirkstall can yet be dated with certainty, and no cooking vessels of that date have been recognised, though finds from Knaresborough and from Kirkby Malzeard suggest that pottery was still used for cooking-pots alongside the more popular iron-ware.

In 1950 part of an imported French jug was wrongly ascribed to the fourteenth century. Mr. G. C. Dunning has ample evidence that this type of ware, found on a number of sites in England was imported from Normandy in the second half of the thirteenth century.

In southern England the fifteenth century saw the rise of what might be called a pottery industry. Groups of kilns south of London were serving a wide area and were making standardised pots in a range of sizes. There is insufficient evidence to say whether or not a comparable development took place in the north, but it can be said that pots identified at Kirkstall as of fifteenth century manufacture are, for the first time since the twelfth century, of a type found over a wide area of northern England. Such, for example, are the small red jugs, found in large numbers at York, and in fragmentary state at the Abbey and on many other northern sites; these date from the very end of the fourteenth century and continue well into the fifteenth. Such too, are the large three-handled pitchers with bung-holes, remains of a considerable number of which have been found at the Abbey. The most recent excavation makes it probable that the well-known brown and cream "Cistercian ware" also had its beginnings in the fifteenth century rather than, as has been thought, in the period immediately before the dissolution.

These small Cistercian-ware cups or bowls must have been in fairly common use in the sixteenth century, for each excavation produces parts of several different vessels, and they form a high proportion of the recognisably "late" ware found. Glazed open bowls or platters of late date, such as are found on some Cistercian

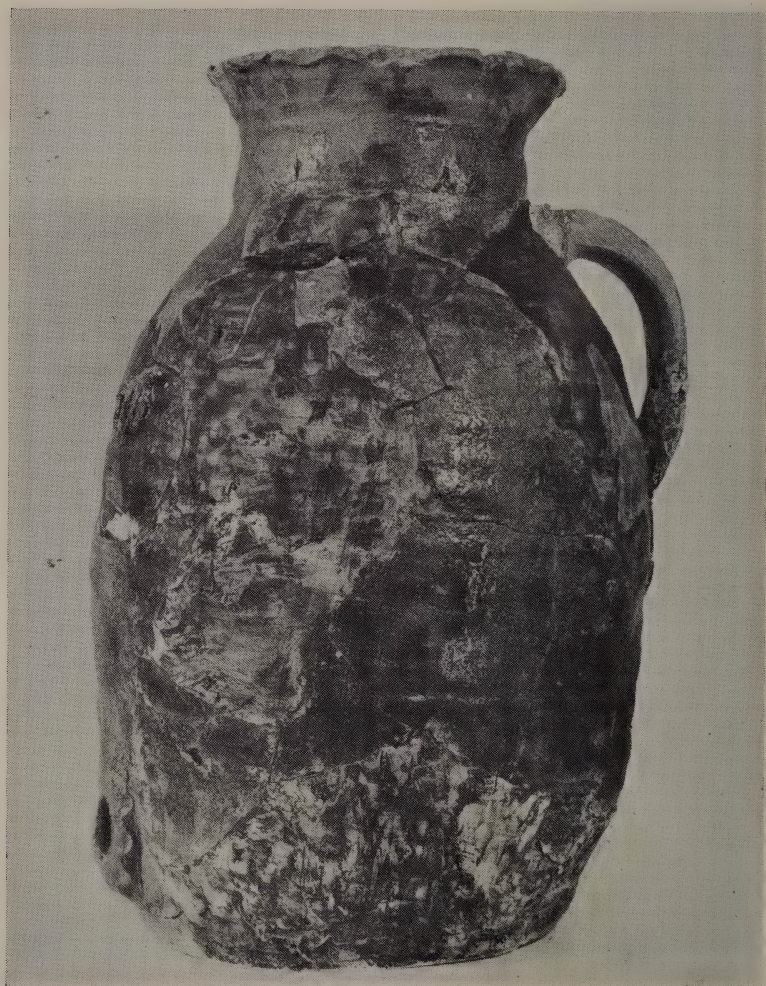
sites, have not yet been found at Kirkstall, nor is it possible to point to any one pitcher as certainly of sixteenth century date. The large three-handled pitchers, however, are known to have been in use long after the fifteenth century; and many of the fragments of these that have been found about the monastery, together with the vessels from the cloister cistern and certain pieces of fine white ware with a brilliant green glaze, probably represent the years immediately prior to the dissolution.

Such is the sequence as it has so far been worked out at Kirkstall. It represents a framework on which to build rather than a comprehensive statement. The great lack is still of pitchers and jugs from the thirteenth and fourteenth centuries. But there remains much unexcavated ground in the Abbey precincts, and it can be hoped that future work will fill the gaps.

H. E. JEAN LE PATOUREL.



PLATE I



THE KIRKSTALL THREE HANDLED PITCHER

*Copyright: Leeds City Museums*

KIRKSTALL ABBEY EXCAVATION  
FIRST REPORT

By

T. A. HUME, B.A. and D. E. OWEN, PH.D.

# Kirkstall Abbey Excavation

## FIRST REPORT

By T. A. HUME, B.A. and DAVID E. OWEN, PH.D.

### PLAN

**D**IGGING was carried out at Kirkstall Abbey in June, 1950, by a party which included members of the staff of Leeds University and Leeds City Museums under the leadership of Mr. W. V. Wade, with the object of finding traces of occupation. The approximate dates of erection of the fabric of the building were known and it was hoped that stratified finds might occur which could be linked up with these structures. Previous excavations in the Abbey precincts had concentrated on the extent of the walls and no record has been made of the pottery and other miscellaneous objects which have found their way into the City Museum and other collections. It was therefore decided to dig an area where little or no disturbance had taken place and where adjacent structures had been built at an early stage in the Abbey's history. The twelfth century kitchen and the court-yard south of the kitchen wall were chosen. The northern part of this court-yard, bounded on the north by the kitchen, on the east by the twelfth century frater, and on the west by the fifteenth century malthouse vat, was well explored and forms the subject of this paper. Time allowed only a start in the kitchen, and only brief reference to it is made here.

### STRUCTURAL FINDS

It was first intended to dig an L-shaped trench in the court-yard but early work revealed paving two or three inches beneath the grass. The removal of the grass within the whole area bounded by the walls of the kitchen and frater, and the outside edges of the trench, uncovered a complete floor (A). Made of large shaped flagstones, it abutted on to both kitchen and frater walls. The stones were firmly bedded on to clay. It had no separate curb on the south but was bounded by the curb of a lower floor (B described below). On the west it abutted on to a wall which ran southwards obliquely from the kitchen wall (see fig. 1). The length from east to west was thirty-five feet and the breadth from north to south seven feet six inches. Photographs taken forty or fifty years ago at the south side of the Abbey Gatehouse showed a curbed and paved road. The paving was similar in appearance to the flagstones of Floor A.

On removing Floor A and its clay bedding, a lower floor (B) was uncovered. At the kitchen wall its surface was four to six inches below the surface of Floor A. It was formed of sandstone

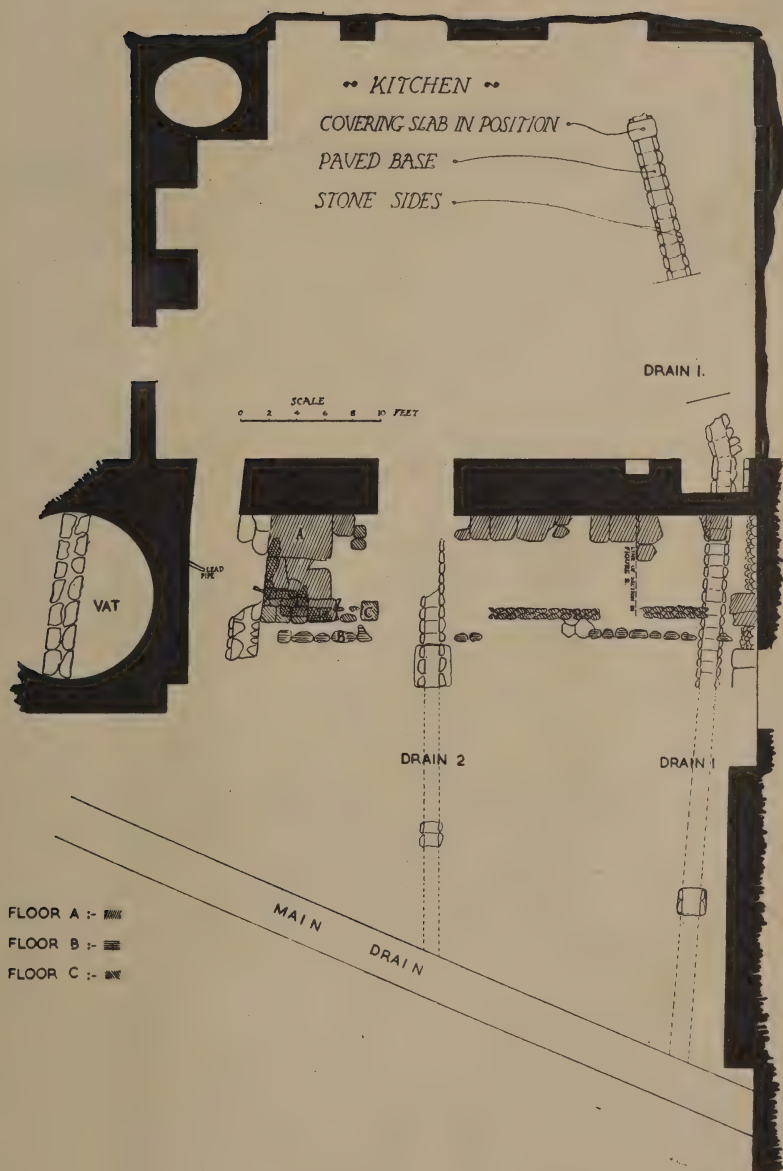


FIG 1. PLAN OF FLOORS AND DRAINS

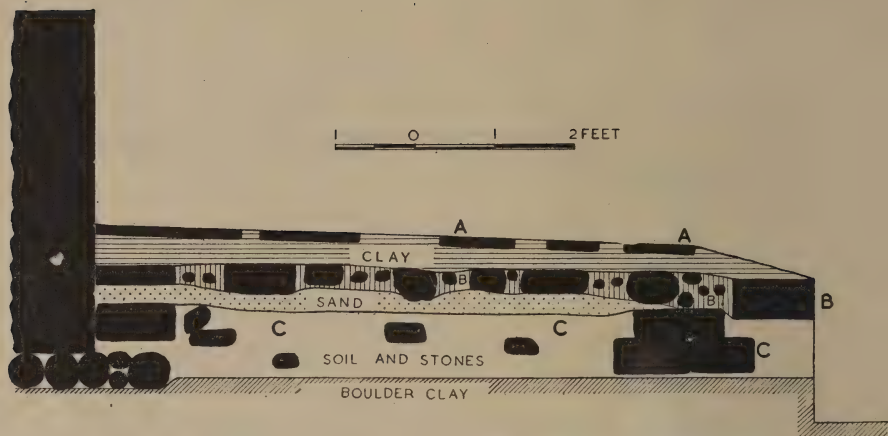


FIG. 2. SECTION THROUGH FLOORS FROM KITCHEN WALL SOUTHWARDS

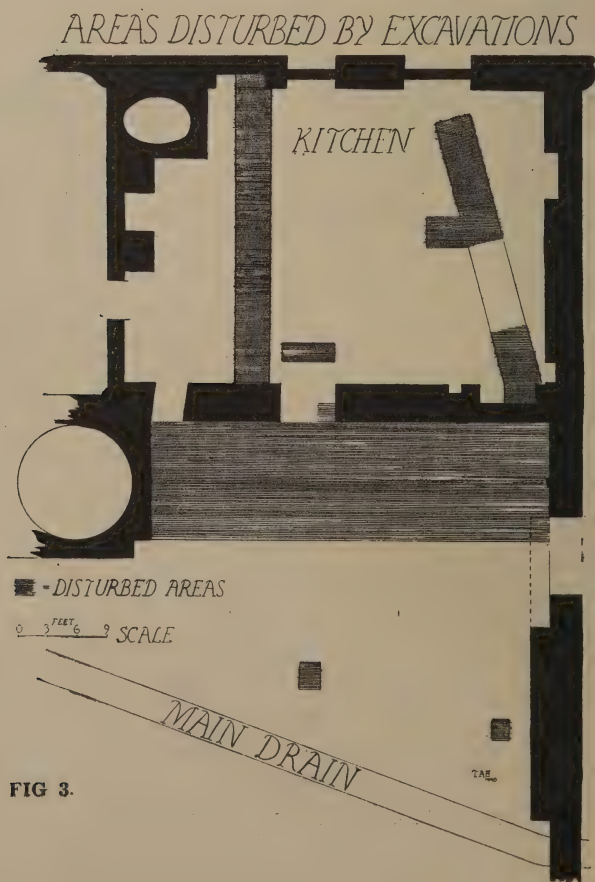


FIG 3.

boulders thicker than the flags of Floor A. Of varying shapes and sizes from a foot across and four inches deep to quite small cobbles, they were bedded on to a continuous layer of sand up to three inches thick. Many were missing and the gaps had been filled with soil and pebbles before Floor A was laid. The surface of Floor B showed traces of decayed cement or mortar and it appears that this had been used to give a smooth and level finish.

Floor B was bounded on the south by a curb of large squared stones up to eight inches deep. Resting on soil and stones, these had sometimes sagged outwards. Against the outer side of many were packed small pebbles and fragments of pottery. Other pottery further out from the curb was quite unstratified. Floor B was very clearly traceable on the eastern half of the court-yard. Opposite the kitchen doorway the ground had been disturbed by the insertion of a recent drain. West of the doorway the floor had almost entirely disappeared though the curb was still traceable right up to the oblique wall mentioned above. The edge of this curb was nine feet from the kitchen wall.

Beneath Floor B a lower floor (C) was found. Built of large boulders, and with a surface of decayed cement, it was similar in construction to Floor B. It was not bedded on either sand or clay however but rested directly on soil and stones and these in turn on untouched Boulder Clay. Many stones were missing towards the eastern end but at the south west corner it was almost complete. It was bounded by a well made curb of ashlar on the south and abutted on to the oblique wall (see above) on the west. Its measurements from north to south were rather less than eight feet. The smaller width of Floor C explains the subsidence of parts of the curb of Floor B already mentioned. Floor C abutted on to the lowermost course of both kitchen and refectory walls which rested on a foundation of cobbles laid in a trench cut in the undisturbed clay. Immediately outside the centre of the bounding curb, three flagstones were laid firmly on clay. These possibly formed the foundations for a wooden post which could have supported a roof. The south wall of the kitchen has been very much restored, but in two places there are sockets which could have held roof joists.

In the trench beyond the curbs two medieval drains were found. Both were traced as far as possible in each direction. Drain 1 was adjacent to the frater and Drain 2 opposite the kitchen door.

Drain 1 was traced from a point inside the kitchen, five feet south of the cloister wall. North of this point the drain had been removed by later disturbances. Southwards it was found to curve across the kitchen floor and pass under the south wall, the lower-most course of which formed its roof. From there it ran almost parallel to the frater wall towards the main drain where its probable point of entry into the latter was masked by

recent restoration work. It underlay Floor C whose curb rested upon it. Its base was flagged and its sides composed of ashlar fitted closely together. Upon these rested a roof of flagstones. This drain, from its position beneath the kitchen wall, was clearly built in the twelfth century. At some later period it was abandoned. For some distance outside the kitchen its roof flags were pushed over to the west and it was filled up with soil and a few pieces of pottery. The only flag which had not been moved underlay the curb of Floor C. Further south the flags were still in position, but were cracked and forced in by the weight of soil on top. One flag was also in position within the kitchen. The drain varied from about ten inches deep and seven or more inches wide outside the kitchen to about four inches deep and eight inches wide in the north side of the kitchen.

Drain 2 was excavated from a point one foot south of the kitchen and ran southwards to enter the main drain and northwards towards the kitchen doorway. Unfortunately, the laying of a recent drain from the cloisters through the kitchen doorway had broken and removed portions of Drain 2 and destroyed all traces of it within the kitchen. Its construction was similar to Drain 1. Its internal measurements were eight to ten inches wide and twelve inches deep. Its upper level, one foot from the kitchen, was seven inches above the offset course of the doorway, and if continued inside would soon have reached the present surface. Thus it is unlikely that it crossed the kitchen. Where it passed below the level of Floor C, that floor was broken and its curb missing. Floor B with its sand layer passed undisturbed over the top. Thus Drain 2 was later than Drain 1 and came up to a higher level.

A wall has been noted at the western end of the floors. This abutted on to the wall of the kitchen but was not bonded in with it and ran southwards at a slightly oblique angle (see fig. 1). Its width was two feet and its two ashlar sides had a small rubble infilling. Beneath it, bedded in clay, ran a lead pipe. This passed underneath the wall on the east and was not traced farther in that direction. It extended westwards beneath the eastern end of the vat and headed towards the southern archway of what was later to become the malthouse.

Thus the structural sequence of events seems to be as follows:—In the twelfth century a drain was constructed across the kitchen floor to the main drain of the building; the kitchen walls were built; slightly later, but still in the twelfth century, the frater wall was erected. The lead pipe mentioned may have been laid at this period. Rather later, but at a time not yet known, the oblique wall containing the western end of the floors was built. It is worthy of note that a wall which is seen to underlie the fifteenth century vat runs parallel to this oblique wall. Then Floor C was built and it is possible that the small court-yard

was roofed. Upon Floor C small fragments of French pottery, which have been dated to the fourteenth century, were found. Still later, at a date tentatively assigned to the fifteenth century (see notes on pottery), Drain 1 was abandoned and filled in where it was to underlie Floor B, and Drain 2 was constructed to pass through the kitchen doorway. No doubt the floor levels within and outside the kitchen were higher than those of twelfth century. Floor C was broken for the new drain and Floor B was laid over both. Bounded by a curb, it had greater width than Floor C and against its curb was packed rubble, the content of which was the same as that beneath Floor B. Thus the closing of Drain 1, the building of Drain 2, and the laying of Floor B was a single operation. Finally, perhaps only a short time before the dissolution of the monastery in 1539, Floor A was laid.

In the monograph on Kirkstall Abbey by St. John Hope and Bilson (*Thoresby Society Publications*, Vol. XVI, 1907) a pentise was suggested in the courtyard, the evidence being the corbels for supporting roofing timbers along the frater wall. No mention was made of a floor. The Excavation showed that if such a pentise existed, it was not floored along the frater wall.

### MISCELLANEOUS FINDS

In addition to pottery mentioned below, numerous other items were unearthed. There were two small pieces of iron cooking pot considerably blackened by fire. Pieces of window glass, both translucent black and clear, were frequently found. A complete stone roofing tile was discovered (approximately  $8\frac{1}{2}$  inches square with a hole drilled  $2\frac{1}{2}$  inches from one corner), and fragments of such tiles were common. Many of these were on the floors and were also used for packing. These tiles were fixed on the roofs by means of nails through the holes and some nails were found in position in the tiles.

A coin, unfortunately unstratified, occurred near the southwest corner of the paved courtyard. It was a second issue penny of Alexander III of Scotland (1249-1285): obv. & ALE (XANDER DEI) GRA., crowned profile looking left, with sceptre on left; rev. (REX) SCO TOR VM ( ). Single long cross with six pointed star in each segment.

Many animal bones, including ox, sheep, horse, dog, and rat were found. Oyster and mussel shells were very common, both inside and outside the kitchen, so numerous in some places that they formed layers several inches thick. Oysters outnumbered the mussels and were small in size. Coal and charcoal were both found and it appeared that the courtyard was at some time used as a coal store. A charcoal patch beneath Floor B appeared to mark the site of a fire. Finally small nodules of copper slag were found and a plano-convex piece of lead possibly tapped out of a ladle. These suggested that casting may have taken place on the spot.

POTTERY by H. E. Jean Le Patourel.

One of the main objects of the excavation was to obtain dated pottery which might add to our rather meagre knowledge of the development of medieval pottery in Yorkshire. We did not succeed directly in doing this for the bulk of our finds were unstratified, and there were no associated finds to help in the dating. Nevertheless the excavation yielded some useful material in the shape of a large three-handled pitcher with a bung-hole,<sup>1</sup> fragments of others of the same type, two sherds of a fourteenth century imported ware, a kiln prop and a number of sixteenth century fragments, some of a type already well known. In the one trench in which stratification was noted a number of small pieces of pottery were found. These included two pieces of the three-handled pitcher, the greater part of which was found among the rubble packed against the retaining curb of Floor B. The other fragments, while not sufficiently large to give any indication of the type of vessels from which they came, yet give useful information on the sort of ware contemporary with the pitcher. They fall into four main classes. First the hard, even grey ware of the large pitcher; second, a much coarser red ware, gritty, and often very much pitted, with traces of brown glaze on the outside; third a much closer, fine, smooth red ware, again with traces of external brown glaze, and last a very hard purplish brown ware, so mixed with grit that it must have caused considerable discomfort to the potter who threw it. The sherds of this ware were unglazed. All these types occurred elsewhere on the site. This stratified pottery came from the filling of the earlier drain, beneath the layer of sand which underlies the second floor. It must therefore have been in use either when this floor was laid or shortly before, and it may prove very useful for comparison with the finds of any future excavation. This association with the middle of the three floors suggests a date neither very early nor very late in the history of the Abbey.

The large pitcher must have been a common type, for in the small area excavated, fragments of three similar vessels were found. The only external evidence for its date comes from its association with the middle floor, but analogy takes us some way further. Mr. John Charlton speaks of a category of three-handled pitchers characteristic of North-Eastern England.<sup>2</sup> These fall into two classes, pitchers with bridge spouts which he dates to the thirteenth and fourteenth centuries, and a later series with bung-holes<sup>3</sup> replacing the spouts. A number of these latter were among the finds on the fifteenth century site at Cambokeels in Weardale.<sup>4</sup> Others have been found at York<sup>5</sup>, Yarm<sup>6</sup> and Newcastle. There are fragments also at Fountains Hall; and some handles and bases with bung-holes from Byland Abbey compare closely with those from Cambokeels, and may belong to

*The small numbers relate to the references at the end of the paper.*

the same series.<sup>7</sup> A comparison of the Kirkstall pitcher with such of these as I have been able to see suggests that, though there are differences in detail, there are sufficient similarities to allow it to be placed in the same category, and to date it, provisionally, to the fifteenth century.

The series is characterised by a hard smooth dark grey ware. Each pitcher has three large handles, somewhat flat in section and grooved vertically with bold foliations where the handle joins the body. The Kirkstall examples are, however, exceptional in that they have a rather greater admixture of grit giving a rougher surface than is usual, and also in that the handles spring from the junction of the neck and shoulder in the complete pitcher. The more usual arrangement is for them to spring either from an applied cordon of plecrust ornament, half to one inch below the rim as at Fountains, or straight from the body of the pot about an inch below the rim as at Cambokeels. The pitchers have a heavy rounded base and deep internal grooves or corrugations formed by the potters' fingers round the lower part of the pot. The bung-hole is set an inch or so from the base, midway between two handles. At Cambokeels, Fountains and Byland these bung-holes are plain, but at Kirkstall three out of the four found have some form of decoration. In the most complete example, the bung-hole has been formed by a pad of clay moulded on to the exterior of the pitcher and then pressed with a fingertip for decoration. The rim is everted and slightly scalloped, this latter is another feature I have not seen elsewhere on these pitchers. A small plaque of clay set decoratively on the shoulder in line with the bung-hole is represented on the York example by a pattern of applied strips of fingerpressed clay. Like almost all the Kirkstall sherds the pitcher is glazed with a rather patchy brown glaze instead of the more usual green or brownish green. This glaze is on the exterior only.

Part of a grey glazed frilly base of Rhenish stoneware belongs to the last years of the Abbey in the early sixteenth century. Also from the sixteenth century were a few fragments of Cistercian ware, with the usual dark brown glaze. These last were all plain, though pottery decorated with applied cream clay very similar to those at Fountains Abbey has been picked up at Kirkstall in the past and is in the Abbey House Museum. One of this year's finds has an imperfect base where the glaze has adhered to the bottom of the kiln, and may well be a waster. There is certain other evidence for a kiln in the locality, since a number of pieces of glaze were found during the course of the excavations; and the presence of a small hexagonal stone, covered on five sides with thick green glaze, is difficult to account for other than as a prop from a nearby kiln.

Even though the common pottery of the Abbey may have been made on the spot, there were importations from abroad of pieces of fine pottery. Two sherds found below the level of the second floor differ strikingly from the main body of the finds. Their smooth cream ware, their colour and decoration, even the shoulder moulding on one of the sherds are exactly paralleled by a jug in the British Museum from Sutton Courtenay in Berkshire. <sup>8</sup> This jug is thought to be a French importation of the first half of the fourteenth century. Up to now, the only other place where similar ware has been found is at Stonar in Kent, an ancient port which has produced a lot of imported French wares. It seems very surprising that such pottery should appear on a site so far north, though it must be borne in mind that Hull and Boston had close trading connections with France in the fourteenth century.

Apart from this early foreign ware, the pottery, as far as it is possible to judge at present, appears to be all from the last two centuries of the Abbey's occupation.

#### DESCRIPTION\*

(1) The large three-handled pitcher, partly covered on the exterior with a patchy dark brown glaze. The upper part of the neck and sides of the handles where there is no glaze, is red; the body is of a hard, dark grey ware. The potting is regular and, for so large a pitcher, the walls are unusually thin. The corrugations which are a usual feature on the inside of these pitchers are here very marked and amount almost to a decorative feature on the exterior. The height,  $17\frac{1}{2}$  inches, base  $7\frac{3}{4}$  inches and shoulder measurement,  $9\frac{1}{2}$  inches, accord well with others of the series.

(2) and (3) The bung-hole of a similar pitcher. This appears to be unglazed, though it may have been partly glazed on its upper surface. It is of similar ware to the first, though with a smoother exterior surface. The diameter of its base was about  $8\frac{1}{2}$  inches. The corrugations here are internal only. One piece came from the filling of the first drain making it contemporary with (1).

(4) One of the few decorated sherds. The ware and glaze are similar to (1). The decoration consists of incised lines.

(5) Imported French ware. The body is of an extremely fine, even, white clay, the potting regular and the glaze even. The impression is of a much higher degree of technical skill. Panels of brown glaze are divided from the cream glazed body by thin strips of applied cream clay and ornamented with blobs of contrasting cream. The strips themselves are further ornamented by rouletting. The shoulder moulding is a feature also of the Sutton Courtenay jug referred to above.

\* The numbers in brackets refer to the figured outlines.

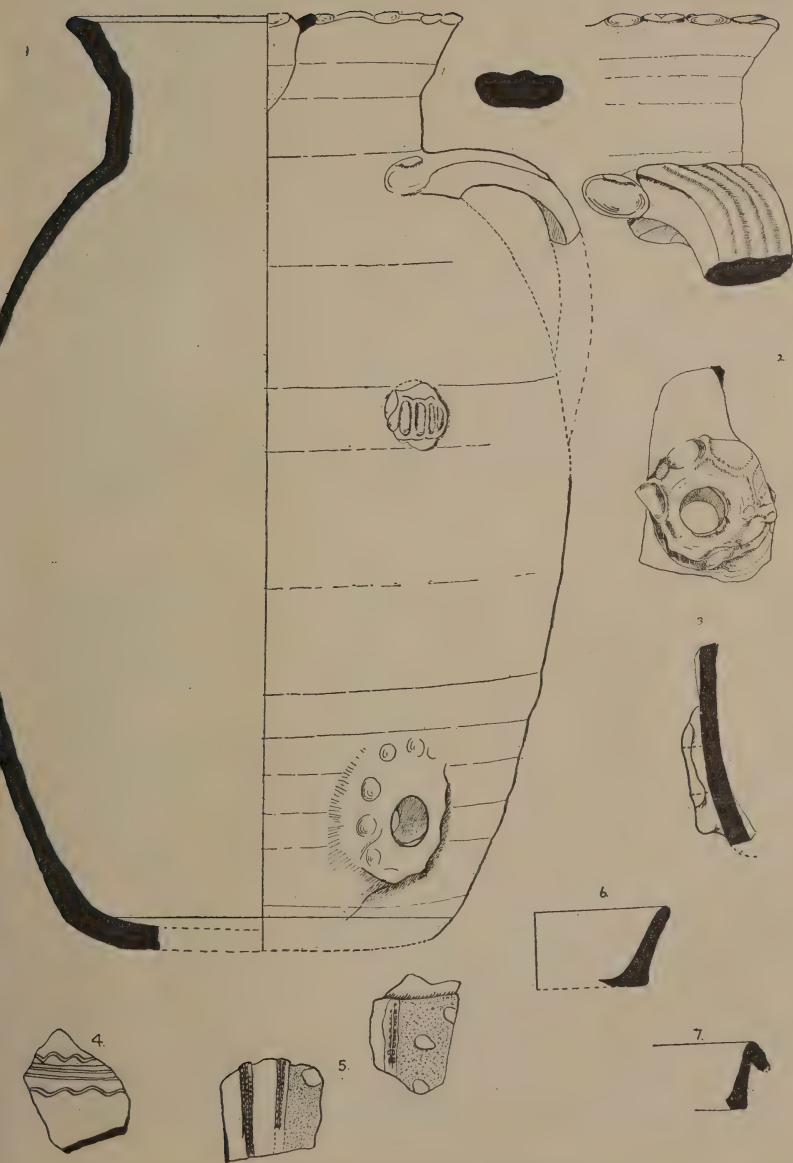


FIG. 4. POTTERY FROM SITE, ONE QUARTER ORIGINAL SIZE

(6) Part of a shallow dish, of smooth, even, red ware. The interior is covered with a light brown glaze. Diameter  $5\frac{1}{2}$  inches.

(7) Part of a shallow dish. The ware is similar to (6) but the interior glaze is green, with a patch of orange-brown on the rim. The rim is too irregular to give an accurate idea of its diameter from so small a sherd. Both (6) and (7) are probably from the sixteenth century.

## CONCLUSION

One of the most interesting results of the excavation is the evidence pointing to an Abbey kiln. Pottery in the middle ages was so local a craft and the abbeys themselves were such self-contained communities that *prima facie* it would not be surprising to find that domestic pottery was made within the abbey precinct. Little is known of the pottery of the great Yorkshire Abbeys. Early excavations ignored such pottery as was found, and on those sites where it has been preserved, it has not yet been fully studied. It would certainly help considerably in the establishing of a chronology for northern pottery in the middle ages if the kiln or kilns at Kirkstall could be found in some future excavation.

## REFERENCES:

- 1 This pitcher and all other finds from this year's excavation are in the Abbey House Museum, Leeds.
- 2 *Archaeologia Aeliana*, Fourth Series, XXV, pp. 192-3.
- 3 *Soc. of Antiq. Newcastle-on-Tyne*, 4th series, V., pp. 228-32.
- 4 *Arch. Ael.*, 4th series, XXVII, pp. 200ff.
- 5 Yorkshire Museum, York, no. 152. This is undated.
- 6 I have not been able to trace this Yarm pitcher. It is possible that it belongs to the earlier series.
- 7 Pitchers at Dunstanburgh (*Arch. Ael.* 4th series XIII, p. 288) and at Glasgow (*P.S.A. Scot.* 1917-18, p. 69) probably belong to the earlier series.
- 8 For information about this jug (British Museum, 1910.5.5.4.) as well as for most helpful suggestions about the dating of the pottery I am indebted to Mr. Bruce Mitford of the British Museum.



(a) DRAIN 1 PASSING UNDER THE KITCHEN WALL

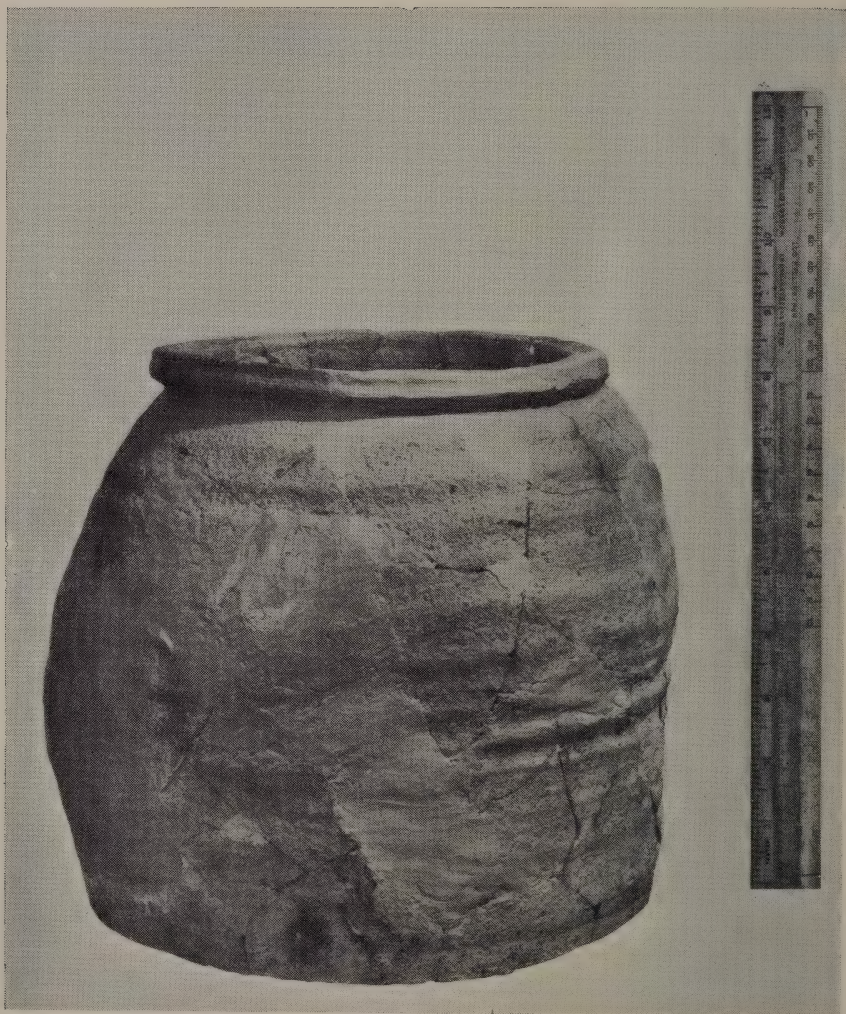


(b) SOUTH-WEST CORNER OF THE SITE

*Photographs by W. V. Wade, Esq., M.A.*







THE KIRKSTALL TWELFTH CENTURY COOKING POT

*Copyright: Leeds City Museums*

# Kirkstall Abbey Excavation

## 2nd REPORT 1951

by T. A. HUME, B.A. and D. E. OWEN, Ph.D.

### 1. INTRODUCTION

**I**N 1950 a party of archaeologists excavated a small area of Kirkstall Abbey (see *Kirkstall Abbey Excavations 1st Report, Publications of the Thoresby Society*). In 1951 substantially the same party took part in a second excavation. It included members of the staff of Leeds University, Leeds City Museums and voluntary helpers, under the direction of Mr. W. V. Wade.

The object in continuing the exploration was to get a series of stratified finds, thus to know more of the daily life of the monks.

Because of the previous year's general success, a similar area was chosen. It was a courtyard bounded on the west by the frater, on the east by the monks' dorter and its sub-vault, on the north by the warming house and on the south by the later meat kitchen. The whole area was too large for the time available and the size of the party. Thus the northern side only was selected. From the oblique slot on the dorter wall, it was clear that this northern portion of the courtyard had been roofed at some time. Lack of a corresponding slot on the frater wall showed that the roof did not extend over the whole width of the area.

Thus it was felt that the area roofed might also have been floored and that stratification might exist. Such a structure was first sought by trenching and later most of the area was stripped layer by layer.

### 2. STRUCTURAL RESULTS

The whole region proved to be highly complicated. The three chief structures found were:—

(a) A stone built chamber in the north-east corner.

(b) Foundations of a wall running approximately north and south, but obliquely to the main Abbey structures, rather west of the centre of the courtyard. This reappeared on the north side of the warming house wall.

(c) A shallower area in the north-east corner containing traces of floors. This is bounded on the south by an open drain or drip trench, immediately beneath the southern extremity of the roof. On the west the edge is not so clear, though it may be marked by a line of flagstones.

The relations of structures (a) and (b) to each other and to the abbey walls are not completely clear. Structure (c) clearly overlies both and abuts onto the Abbey walls.

(a) *The stone-built chamber* is sited in the extreme north-east corner of the courtyard and is adjacent both to the warming-house wall and to the doorway into the dorter sub-vault (see fig. 5). Unfortunately the safety of the fabric of the building made it impossible to clear the disturbed ground right back in either of these structures, thus it is not known whether these disturbances pass under the wall and through the doorway. In a future dig it is hoped to trench deeply north of the wall and east of the doorway. It was found, however, that the southern jamb of the doorway stood upon natural boulder clay which had been cut vertically and filled with the disturbed ground. This would suggest that the disturbance containing the stone built chamber dates to a period after the twelfth century wall and doorway.

The floor of the stone-built chamber is seven feet below present ground level (and five feet six inches below the general surface level of the undisturbed boulder clay). It is approximately square four feet seven inches from north to south and four feet three inches from east to west at the widest points. On north, east and south it is surrounded by a wall built of roughly faced stone. On the west is a flight of three steep and narrow unworn steps. The area of disturbed ground to the west and the greater height of the walls suggest that there were originally many more steps. The whole structure is built on natural gravel which is seen to underlie the boulder clay. A section in the undisturbed subsoil dug to a depth of nine feet, immediately adjacent to the structure showed:—

Soil	Depth	
	5 inches	5 inches
Disturbed ground	13 inches	1 ft. 6 inches
Brown yellow boulder clay	21 inches	3 ft. 3 inches
Sandy boulder clay and sand	21 inches	5 ft. 0 inches
Gravel with sand	4 ft. +	9 ft. 0 inches

The floor, made of four inch thick flagstones, is shown on the plan. If the structure had been built to hold water, the small flag might have been lifted for drainage. In this case the glacial gravels would have allowed the waters to drain quickly away. It would seem more likely however that the chamber was intended to remain dry. The stones of the walls were not set in mortar or clay and the structure would hold water for a short time only. There must have been difficulty in finding cold storage in those times. Although the chamber is small it could perhaps have held milk, or special wines. In the fifteenth century the meat kitchen was built. Perhaps the chamber was also constructed as a meat store some little way from the kitchen as otherwise it would have been too close to the main drain of the Abbey. The whole chamber, floor, walls and steps, is made of a fine-grained yellow and flaggy sandstone quite different from the coarse millstone grit of the Abbey. Local quarrymen confirm,



however, that such a stone occurs within two miles of the Abbey. The finish is much poorer than that on the masonry of most of the Abbey. No finds occurred beneath any part of the structure and there is no direct evidence of its age.

The chamber is covered by a series of deposits fairly well stratified. First the chamber and steps are packed with small stones of the same sandstone almost as though some were broken up for the purpose. Then there are four inches of stony soil. Then a two-three inch layer of charcoal and mud the "black layer" whose level slopes down gently into the north-east corner but up again at an angle of one in three into the doorway of the monks' dorter sub-vault. It also thins out to nothing towards the edges. It varies in level from 3 feet 6 inches to 4 feet below present ground level. On top of this are clay and stones, about twelve inches, then a stony layer with a lot of pottery, then a fourteen inch clay layer. This layer of clay has a flat upper surface fourteen inches below present ground level. Gravel appears to have been trodden into it to make a rough floor. This layer also fills a three foot deep channel in the natural boulder clay cut from the south side southwards. The channel reaches as far as the open drain but is not found on the south side. The purpose of the channel is further discussed with the description of the drain. All layers above the stone chamber contain pottery, and all slope up very steeply into the dorter sub-vault doorway.

The pottery from this filling is mixed. A sherd from below the black layer is of the smooth grey ware associated with fifteenth century sites in the north of England (see last report). A few bits of this ware occurred at all levels. Either therefore the filling is fifteenth century or the ware was made earlier than is usually supposed.

(b) *The foundations of the north-south wall.*

The position of the wall is shown on the plan. Its uppermost stones are found about 21 inches below the present surface level. The foundations consist of large unshaped stones, tightly packed together, and built into a trench cut into the underlying boulder clay. No squared stones were seen. The average width of the wall is two feet six inches. It was traced for twenty-one feet south of the warming house wall and was seen to pass beneath the drip trench (described below). A further trench was opened up six feet south of the point it was last seen but this passed straight into very much disturbed ground. During the restorations of fifty years ago large trees were removed and this appeared to have been the site of such a tree. The wall came up to the foundations of the warming house wall and seemed to merge with them, though its level was slightly lower.

A trench was cut north of the warming house wall and the north-south foundations again appeared. Once more they rest in a trench in the boulder clay and lie at a rather lower level than

the warming house wall foundations. Unless the warming house wall and its foundations were completely removed, stone by stone, it would not be possible to prove beyond doubt its relation to the north-south wall. However, the generally lower level of the latter, the fact that it makes an angle of rather less than ninety degrees with the warming house and the fact that it occupies a trench which the warming house wall does not and also that the warming house wall foundations on the west side appear to be built up against it, suggest that it was built independently and therefore earlier.

The warming house wall was built in the latter part of the twelfth century. It is considered to be the original wall of the range of buildings lying south of the cloister. It is thought, however, that the monks built their church and lay brothers' quarters first, and a building of sorts would be necessary to house them during this work. Perhaps such a building, of wood, was erected on the stone foundations described here. It would have been removed as the permanent structures were completed.

It has already been stated that south of the warming house wall, this wall lies well beneath the drip trench and the flags to be described. North of that wall the succession is as follows. First the natural clay with the wall resting in a trench. The upper level of the untrenched natural clay here is 26 inches below the present surface. Then 12 inches of brown clay covering everything. Then a two inch layer of charcoal. Above this is a five inch layer of sand and pebbles containing sixteenth century pottery, then three inches of soil, then a three inch flag floor, perfectly laid with large rectangular flags shown on the plan. This is only one inch below the present surface.

(c) *The drip trench and higher floor levels.*

No extensive or well-developed floor levels were found in the courtyard. There was nothing comparable with the paved and curbed floors seen last year south of the kitchen. Fragmentary remains of three floor levels did occur however, particularly in the north-east corner. None was seen south of an open drain which appears to have run beneath the edge of the roof.

The lowermost floor, about fourteen inches below present ground level, is composed of a gravel of circular pebbles, simply trodden into the clay. Above this are a few patches of cobbles, set in sand and of level surface ten inches below the present surface. These patches appeared to have had wider extension. Above the cobbles and set on clay are small areas of tiles, five inches below the present surface.

Near the centre of the warming house (see fig. 5) and running south, three inches below the surface, are some large flagstones. In the frater, the floor consists of large flagstones round the edges and laid tiles in the centre. Thus it is possible

that the flags and the tiles in the courtyard were once part of one floor. West of the flags there is no sign of any floor levels.

From the dorter wall and running west for twenty-nine feet (with one break where a tree has grown) is the open drain already mentioned above. It has a flag floor ten inches wide approximately eighteen inches below the present surface. On both sides and sloping outwards are set other flags. These extend some few inches below the level of the base and to a height of about eight inches. The flags are all thin, little more than one inch in thickness. The drain is filled with sand and in a few places other flags are placed inside. These do not appear ever to have formed a cover and there is no evidence that any cover existed.

Nine feet from the dorter wall, beneath a missing slab, a dark circular patch was seen. This appeared to mark a sump. It was cleared out and found to extend one foot seven inches below the drain level. To the north there was a channel about three feet wide in the natural clay which seemed to connect the sump with the disturbed area in the north east corner. The filling of soil clay and stones was pervious except for the uppermost layer which was the clay and gravel floor.

There would seem to be two simple explanations for this channel. In the first case it may have been dug at the same time as the chamber was built. If the open drain and sump were also built at this time, they could have been used to supply rain water to the chamber. On the other hand the infilling of the area containing the chamber is different from that of the channel. It is, therefore, possible that the chamber was filled up and the open drain built at the same time: that the sump and channel were dug to carry water from the drain into the previous layers in and beneath the chamber, thereby obviating the need for a cross drain southwards to the main drain of the Abbey. In this connection it should be noted that half an inch of rain fell one afternoon when the excavations had reached the charcoal layer above the chamber, and that a considerable flood drained away completely by the next morning.

Thus the disturbed area in the north east corner is highly complicated. The authors have not found descriptions of anything quite comparable in other medieval abbeys either in this country or overseas.

### 3 MISCELLANEOUS FINDS OTHER THAN POTTERY

**Coin.** A silver short cross penny of Henry III (1216—1272) was found unstratified near the bottom of the disturbed ground in the north west corner of the area. *Obv.* HENRICVS REX Head of King facing; sceptre in right hand, *Rev.* ✠ ROGER ON. CANT. Short cross voided with quatrefoil in each segment (Penny of group VII—circa 1223—1242).

**Iron.** The very numerous iron objects were all deeply corroded with rust. This has been removed electrolytically. They include a

belt buckle, a fluted blade probably a knife, a small metal plate with a six-sided hole drilled through it and a variety of nails which fall into a number of categories. The commonest are wrought sprigs or floor nails, with a square or rectangular section and a head produced by flattening the top down onto one side. The usual sizes are one and a half inch and two inches, though one is three and a half inches long. They would have been all-purpose and particularly for floor boards, etc. A three inch clasp nail is similar but much thinner in section with a head flattened on two sides. Next in number are one and a half inch and two inch wrought clouts, square sectioned, with heads flattened down on all sides. These again would be of general utility where the head was not intended to sink into the timber. Many fragments of flashing hooks were found. Their use was to attach the lead flashing to the timber rafters. One perfect one, stout and square in section, one and a half inches long, has a large head an inch wide hammered over on one side. One and a half inch door nails with thin rectangular sectioned shanks, have wide, flat three quarter inch heads. These would be used for studding stout doors. A single two inch wall nail with a stout square sectioned shank and a head of larger square section would be powerful enough to go into stonework. Two other pieces of metal, rather over two and a half inches long and of rectangular section, half by one quarter of an inch, are headless and slightly tapering. These may have been parts of holdfasts.

**Brass.** Two small circular brass rings of one inch and five eighths inch diameter were found. Another object was possibly from a book binding. It consisted of two thin plates, rather less than one and a quarter inch by three quarters, pinned together at the four corners. The front is decorated by a leaf pattern pricked onto the surface. Both are pierced centrally by a small circular hole.

**Lead.** The lead was in thin sheets which had been used in roofing and in strips from windows.

**Tiles.** Numerous fragments of roofing tile were found. No complete ones were turned up though some appear to have been about six inches wide by about three and a half inches from top to bottom. Others may have been deeper. Offset from the centre in the long face is a hook an inch and a half wide and deep enough to engage the upper edge of the tile below. With this arrangement it would have been possible to put on the roofing tiles without pegs or nails. A good ridge tile would tie in the top row, which in turn would hold down the row beneath. Such a method is still in use locally to-day.

A number of floor tiles were found. Most were approximately four inches square, undecorated and covered with green glaze. Two smaller ones one and three quarters of an inch square had letters R and B inlaid on their surface, the inlay being filled with white slip. They too were glazed a pale greenish brown.

**Animal Bones and Oyster Shells.** These were very much less plentiful than in 1950, the animals including pig, sheep, ox and horse.

**Flints.** On the surface of undisturbed boulder clay were found six flint chips and a small flint core. Obviously they have no connection with the medieval monastery, but are worth recording, as flints within the boundary of Leeds are very rare, nearly all that have been found coming from a small area in Adel. The proximity to the Aire and the possibility of a pre-historic ford may explain their presence.

**THE POTTERY** by H. E. Jean Le Patourel.

The most important find this year was the greater part of an unglazed cooking-pot. As some fragments came from the foundation trench of the east wall of the monks' refectory, the pot cannot be later in date than the building of this wall. In his historical plan annexed to the *Architectural Description of Kirkstall Abbey*<sup>1</sup> the late Sir William St. John Hope assigned this refectory to the later twelfth century. The documentary evidence for such a date is not unambiguous<sup>2</sup>; but the style of the masonry clearly relates this building to those parts of the abbey which were undoubtedly erected in the twelfth century and stands in marked contrast to the eastern part of the chapter house, a characteristic piece of thirteenth century work.

Since the abbey was founded on the present site c. 1152, it follows that the cooking-pot can be placed with some assurance in the second half of the twelfth century, a period for which there is very little dated pottery in any part of the country. It is made from hard, gritty, well-fired ware; the walls are thin; there is a pronounced rilling<sup>3</sup> on the upper parts of the pot and the slightly sagging base shows wheel-marking on its upper surface. The rim is angular, almost square in section. That this cooking-pot is one of a type is amply demonstrated by the pots found at Castle Hill, Almondbury (some of which Mr. Aubrook, of the Tolson Museum, Huddersfield, has allowed to be published in advance of the rest of the material from the site), and also by some pottery<sup>4</sup> found during the excavation of the Roman fort

<sup>1</sup> *Publications of the Thoresby Society*, XVI (1907).

<sup>2</sup> The "Fundacio Abbathie de Kyrkestall" (*Publ. Thoresby Soc. IV. (1895)* pp. 169-208) states "In diebus illis (sc. of Abbot Alexander, 1147-1182) erecta sunt edificia de Kirkestal ex lapide et lignis delatis, ecclesia videlicet et utrumque dormitorium monachorum scilicet et conversorum utrumque et refectorium claustrum et capitulum et alie officine infra abbaciam necessarie et hec omnia tegulis optime cooperta." In its present form the *Fundacio* is a fifteenth century compilation, though based almost certainly on earlier traditions.

<sup>3</sup> Mr. Cooper, of the Leeds School of Art, drew attention to the fact that the pot was thrown by a left-handed potter working a clock-wise wheel.

<sup>4</sup> I have to thank Miss Fletcher, Hon. Curator of the Ilkley Museum for allowing me to study this material at my convenience.

at Ilkley. Mr. G. C. Dunning<sup>5</sup> suggests that the type has a distribution over the whole of the north of England and the lowlands of Scotland.

It is interesting that these cooking-pots should be technically more advanced than those used in the south during the twelfth century. There, whether it was the widely distributed globular cooking-pot<sup>6</sup> or the more local Cotswold type<sup>7</sup>, the ware was softer and less well fired. The twelfth century cooking-pots from Lydney Castle<sup>8</sup> are nearer in shape to the northern pots, but here again, apart from the unusual Lydney rim, there is a difference in ware. It is not until the thirteenth century that a similar hard, square-rimmed type occurs further south, as at Leicester<sup>9</sup>, or Bungay Castle<sup>10</sup>. These thirteenth-century pots, apart from their lack of pronounced rilling, are very similar to the northern type. If indeed they are derived from it, this seems to provide an interesting reversal of the chronological order usually assumed as between north and south.

The remainder of the pottery was unstratified. Surface finds included a few sherds of "Cistercian ware" decorated with blobs of white slip. These are probably from a vessel similar in shape to one drawn by Mr. J. T. Micklethwaite in his description of Cistercian ware found at Kirkstall and Fountains during the original tidying up of those Abbeys at the end of the last century.<sup>11</sup> The bulk of the pottery, however, including all the vessels figured save the small cooking-pot (no. 20) and the base (no. 24), came from the filling of the unidentified structure in the north-east corner of the court-yard. Three different wares are distinguishable in this area. They were completely mixed at all levels, and as they are unlikely to be all contemporary, this suggests a comparatively late filling for the structure. The first is an extremely coarse, grey, hard-fired fabric including large particles of grit and having a very rough surface. The best example is a cooking-pot (no. 18), and there were the remains of another in the same ware. The second is a hard, grey, gritty ware. It is well fired and in nearly every case oxidation has occurred in the kiln to the extent of reddening both surfaces. This ware was probably in use over a fairly long period of time for there is a considerable difference in the pots made from it. These can be subdivided

<sup>5</sup> I am indebted to Mr. Dunning for drawing my attention to this wider distribution, as well as for his kind help in other ways. Scottish pots which are similar to the Kirkstall find are discussed in *P.S.A. Scot.*, vol. LXXIII, 1938-9, p.225 and vol. LVI, 1921-22, pp. 30-31.

<sup>6</sup> *E.g. Ant. Journ.*, XVI, 1936, p.406, fig. 5.

<sup>7</sup> *Oxoniensia*, XI-XII, 1946-7, pp.169-170.

<sup>8</sup> *Antiq. Journ.*, XI, 1931, pp. 255-7.

<sup>9</sup> *Soc. of Ant. Research Committee*, report No. XV, 1948, p.234.

<sup>10</sup> *Proc. Suffolk Inst. of Arch.*, XXII, 1936, pp.334-5.

<sup>11</sup> *Proc. Soc. Ant.*, 2nd series, vol. XV, 1895, pp.5-13.

into two main categories. First there are the large pitchers (fig. 7 nos. 9 and 10). These are thick-walled and rather carelessly decorated. They compare both in form and ware to a number of those found during the excavation of a kiln at Ashton in Cheshire<sup>12</sup>, and like them, probably belong to the fourteenth century. There are a number of bowls in the same fabric. A brownish-green glaze was used, sometimes inside, sometimes outside, and occasionally on both surfaces of the bowl. On one rim alone was there any attempt at decoration and that amounted only to an irregular stabbing of the upper surface.

The second class in this same ware differs chiefly in the very much thinner walls and in the greater skill of the potting. There were fragments of about half a dozen pitchers, of which the more complete are shown in fig. 9 nos. 21 and 22. The small bowls nos. 16 and 17 may be contemporary with them. It is difficult to suggest a date for these pitchers. Decorative use of thumbing as in no. 22 is found from the thirteenth to the fifteenth century. Twisted handles occur in the south of England in the thirteenth; but there are a considerable number of round-sectioned twisted handles in the smooth grey ware (i.e., the third type discussed below) on many northern sites. These are unlikely to be earlier than the fifteenth century. At Whitby Abbey there are examples in both wares. In the circumstances it is perhaps wise to suspend judgment on dating until more evidence is forthcoming.

The third type of ware, very smooth, grey and well-fired, containing little or no grit, is again a type characteristic of northern England and southern Scotland. It formed the bulk of the material at Cambokeels, a fifteenth century site in Weardale<sup>13</sup>; it was probably in use a century or so earlier; and it certainly persisted until well into the seventeenth century, for a butter-pot of this ware, containing civil war coins was found at Bingley in Yorkshire<sup>14</sup>. Sherds of this fabric occurred sporadically over the whole site; in the area in question it was confined to pieces of a single pitcher (no. 25). It is interesting to compare this pitcher with those made in the grittier fabric; for while the glaze is of the same colour and rather patchy quality, the greater precision of the applied strips and the greater clarity of outline are at once apparent and point to a higher technical skill.

In conclusion, it may be said that the quality and range of the pottery found during the first two years excavations have been most satisfactory. With continued good fortune in the future

<sup>12</sup> Univ. of Liverpool, *Annals of Arch. and Anthropol.*, vol. XXI, 1934 PL. V and VI.

<sup>13</sup> *Arch. Ael.*, XXVII, 1949 pp. 200-204.

<sup>14</sup> *Numismatic Chronicle*, vol. VII, 1948, p.182.

we may hope to build up a chronological sequence at Kirkstall which will go some way to remedy the general scarcity of material available for study in the north of England.

## DESCRIPTION

### Fig. 6. Twelfth century cooking pots.

1. Cooking-pot from Kirkstall, dated by the east wall of the refectory. Hard, gritty fabric, buff, with pink core. The rilling is very decided on the upper part of the pot. The rim is angular with an internal slope; the base sags slightly.

2. Reconstructed cooking pot from Almondbury, of similar ware. A smaller example but with an obvious similarity of style. The rilling is a less marked feature of this pot.

3. Part of a large cooking-pot from Ilkley. Similar ware. Dark buff with grey core. There is blackening on the exterior.

4. Rim of similar ware, buff, from Kirkstall. The rim, which is blackened on the outside, has the characteristic angularity of the series, but is unusual in that it is bent outwards.

5. Rim of cooking pot from Ilkley. Similar ware, pinkish buff in colour, blackened externally.

6. Similar ware from Almondbury. The wall is only 2 mm. thick.

7. Similar ware from Almondbury.

8. Base from Almondbury, slightly sagging. Similar ware.

### Fig. 7. Pitchers.

9. From filling of the structure in N.E. corner of court-yard. Hard gritty grey ware with red surfaces. It is ornamented with four applied strips of clay, running from a slight moulding on the shoulder approximately to the bottom of the green glaze. This glaze covers the pitcher from just below the level of the rim to about 5 inches from the base. There is a second moulding half an inch below the rim which is pinched out into a very slight lip. The base is rounded.

10. Similar ware and shape. The upper part of the pitcher is covered by green glaze; the decoration is more elaborate than in the last. Pads of cream clay in a roughly triangular arrangement are applied between vertical strips. On the pads a varying number of circles has been stamped and the vertical clay strips are further ornamented with crescent-shaped markings. The base is rounded.

### Fig. 8. Bowls and cooking pots.

11. Bowl in hard grey gritty ware, with red surfaces. The interior has a thick dark green glaze over the base extending a little way up the side. The exterior is unglazed. The base is convex, the rim rounded and turned out.

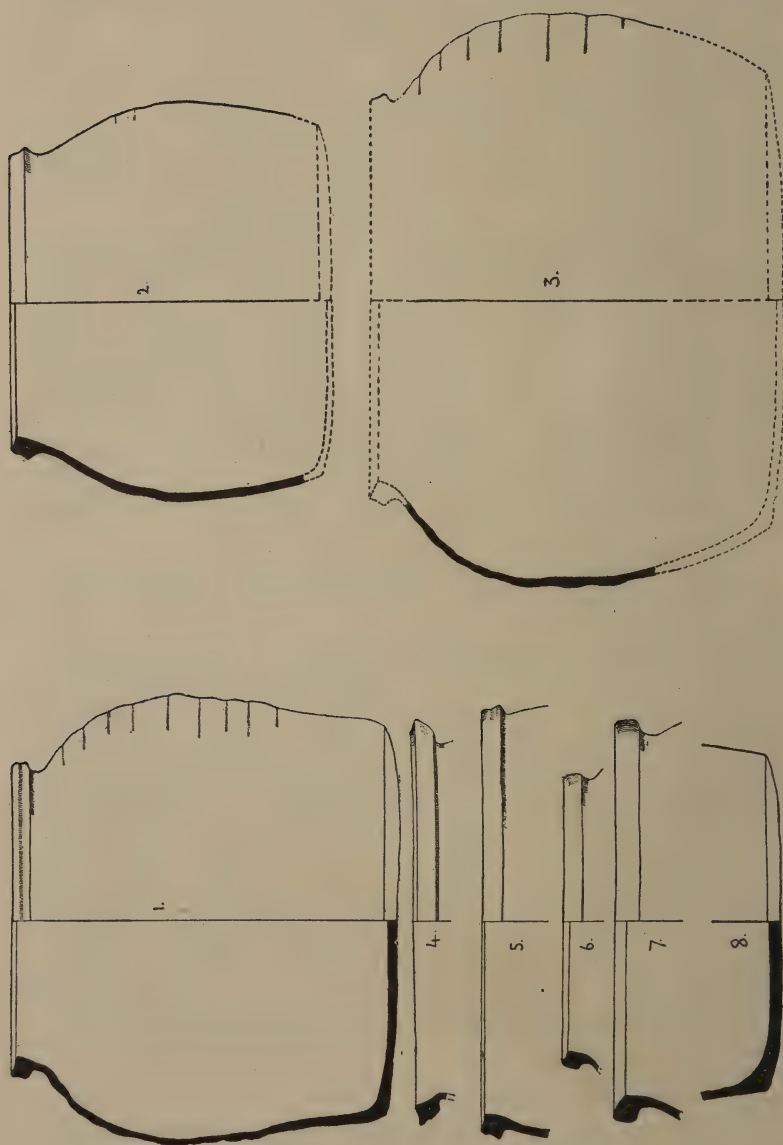


FIG. 6. TWELFTH CENTURY COOKING POTS. Scale  $\frac{1}{4}$

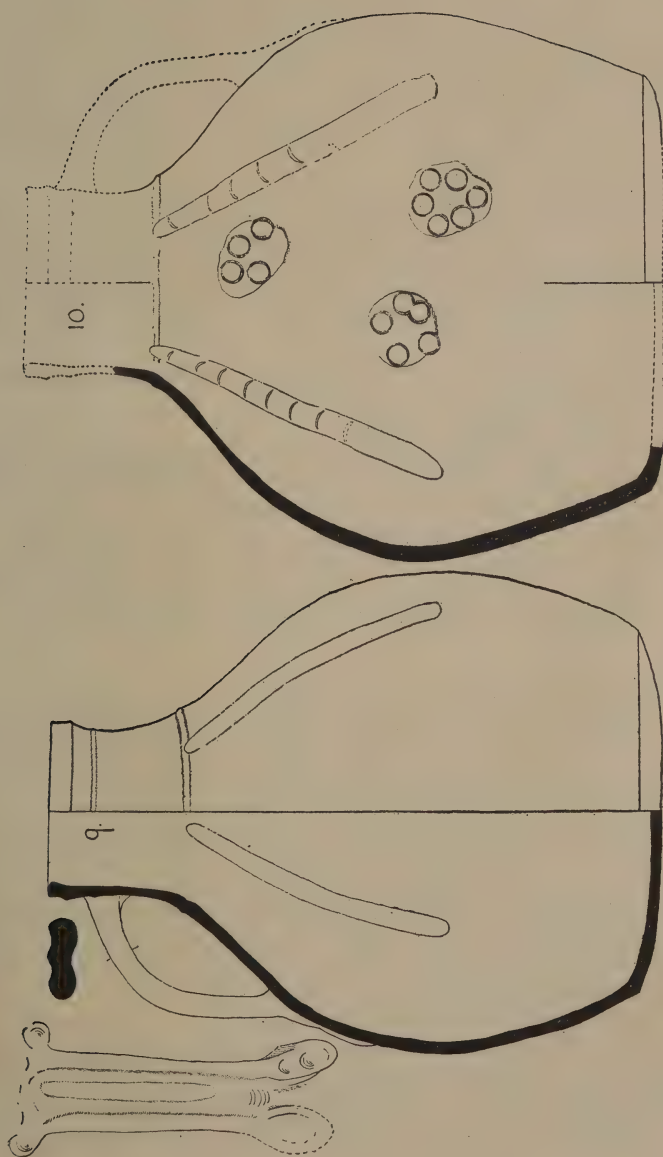


FIG. 7. PITCHERS. Scale  $\frac{1}{4}$

12. Similar ware, surface dark buff inside, red outside. Rim everted and undercut. There are large splashes of olive-green glaze on the rim, and these have trickled down the outside.

13. Similar ware and colour. Splashes of light green glaze on the rim and inside; the exterior is glazed up to 2 cm. of the rim.

14. Smoother ware, red, with a little grit. The interior has been entirely covered with a bronze glaze of rather poor quality, now largely decomposed. This extends over the rim, and about 1 cm. down the outside.

15. Coarse grey ware, red surface. The pan has been glazed over the internal surface, over the rim and on the upper side of the handle. The glaze has decomposed everywhere except in the groove of the handle where it is thick and of a light yellow-green. The base is slightly convex and is thumb-dipped beneath the handle.

16. Gritty ware, red through. Patchy brown glaze ending an inch below the rim on the exterior only.

17. Similar ware and glaze.

18. Large cooking-pot of very coarse, hard, mauve-grey fabric. It contains large particles of grit, some of which have chipped off the outside, giving a pitted appearance.

19. Small unglazed cooking-pot in the usual gritty ware.

20. Small cooking-pot with out-turned rim. The hard, light grey ware is nearer in type to that of the twelfth-century cooking pots than to the rest of the material from the site.

### Fig. 9. Pitchers.

21 Small pitcher with twisted handle. Gritty grey ware with red surfaces. The upper part is covered with brownish-green glaze leaving the rim and lower part of the pitcher unglazed. The rim is thickened but there is no spout. The base is rounded. There is fairly well-marked rilling all the way down the pot.

22. Similar ware. Rim angular, with a moulding some half an inch below it and another on the shoulder. The base is slightly rounded and has decorative thumbing at intervals round it. The handle also has decorative thumbing and has small stab marks slantwise down each side. There is a green glaze over the upper part of the vessel and on the handle. The rim is free from glaze.

23. Thumb-pressed base in similar ware.

24. Base in smooth purplish-grey ware.

25. Part of a pitcher in similar ware. The junction of neck and shoulder is marked by four grooves. The vertical applied strips of cream clay are triangular in section. Olive-green glaze.

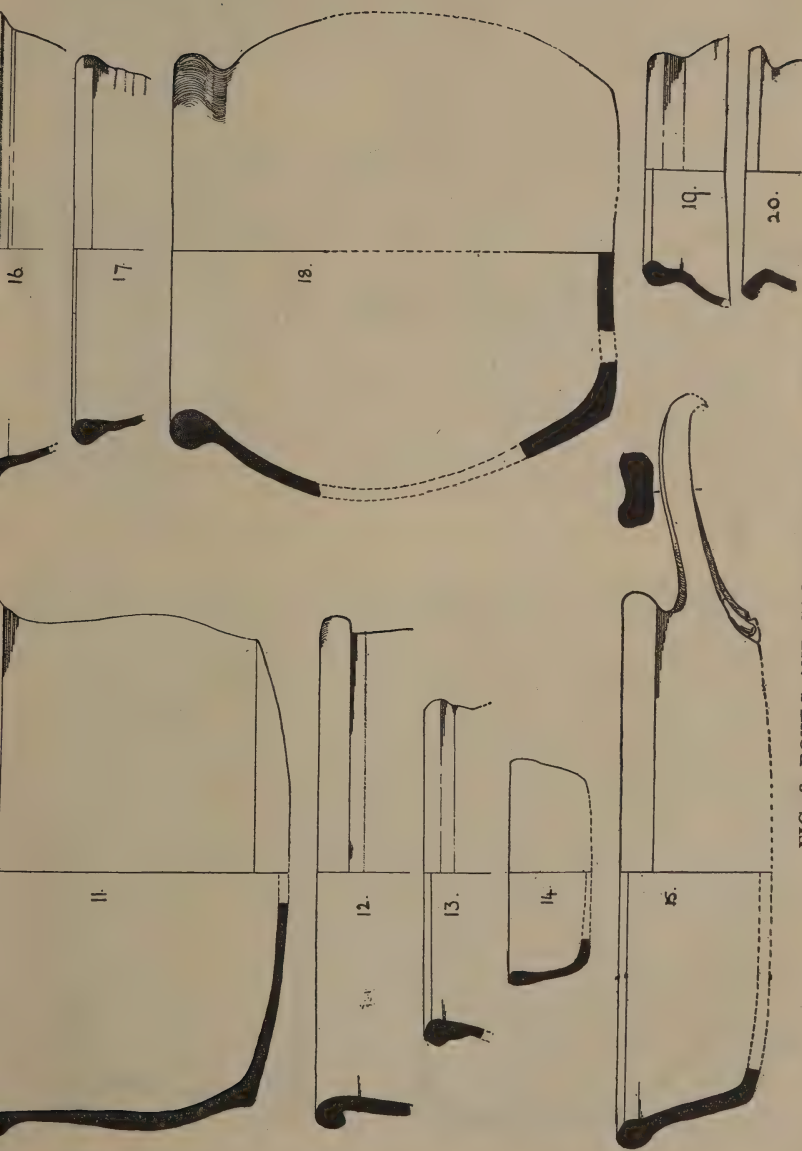
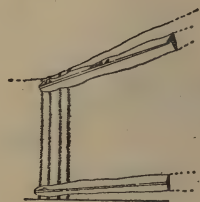
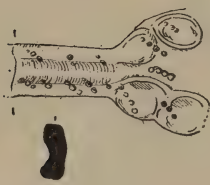
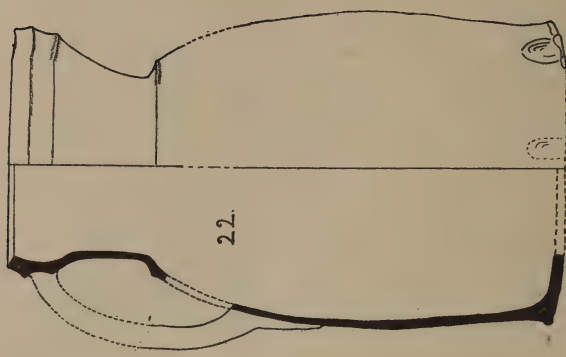
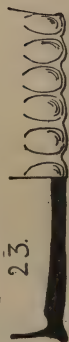
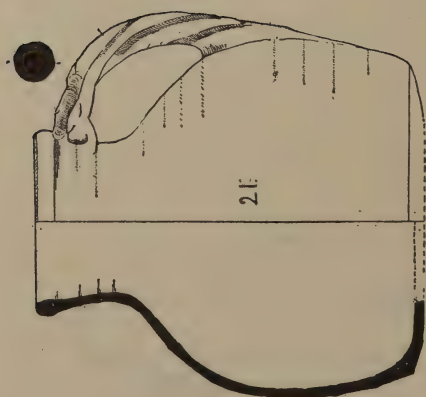


FIG. 8. BOWLS AND COOKING POTS. Scale  $\frac{1}{4}$



25.



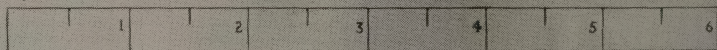


(a) SUNKEN CHAMBER LOOKING WEST



(b) SUNKEN CHAMBER LOOKING NORTH-EAST

*Copyright: Leeds City Museums*



A KIRKSTALL SIXTEENTH CENTURY MUG

*Photo: F. J. Williams.*

# Kirkstall Abbey Excavation

3rd REPORT 1952

by T. A. HUME, B.A. and D. E. OWEN, Ph.D.

## 1. INTRODUCTION

**S**UCCESSFUL excavations in the areas immediately west and east of the Refectory had been carried out in the summers of 1950 and 1951 (see Kirkstall Abbey Excavation, 1st and 2nd Reports. Publications of the Thoresby Society, 1951, 1952). In 1952 it was planned to continue digging and a party of voluntary helpers worked under the direction of Mrs. J. Le Patourel and the authors.

The dig of 1951 had left several problems unsolved, and this fact dictated the areas to be explored. The main structural finds of 1951 had been a stone chamber in the north-east corner of the courtyard south of the warming house, and a wall foundation which passed beneath the south wall of the warming house. The limits of the chamber and the disturbed ground round it were known to be restricted south and west. Therefore it was decided to trench east through the sub-dorter doorway and to excavate north in the warming house. The wall foundation had been traced from the south wall southwards for approximately twenty feet and northwards for four feet. It was decided to trace its extensions southwards and northwards as far as possible. The warming house was known to contain stratified series in the form of floor levels, etc., and it was therefore decided to excavate its whole area layer by layer leaving cross baulks to present sections. Thus the dig was planned in three areas, the warming house, the south end of the wall foundation to extend as far south as possible, and the sub-dorter doorway.

## 2. SUB-DORTER DOORWAY

The trench through the sub-dorter doorway was quickly taken down to the undisturbed boulder clay and glacial gravel. The level of the "natural" sloped up rapidly from the chamber where it was seven feet below the surface, to the west side of the doorway—five feet seven inches deep—to four feet east of the doorway—one foot ten inches below the surface. The deposits were mixed and all lay at a steep angle dipping westwards. They contained numerous pottery fragments. Beneath the doorway itself, large boulders and roughly shaped stones weighing twenty or thirty pounds, had been packed in to prevent subsidence. Their upper surfaces were eight to twelve inches below the offset course of the doorway. Thus the trench proved what had been suspected in 1951. The chamber did not continue eastwards into or through the doorway. When demolished in the fifteenth century, the hole was filled up with a variety of deposits, including broken pot-

sherds. The ground beneath the doorway, which had either slipped or been pushed into the hole, was also filled up, large stones being used to give added strength.

### 3. THE WARMING HOUSE

The warming house was thinly and irregularly covered with turf. Beneath this a flag floor stretched from north to south and abutted on the west onto the large visible fireplace which was quite clearly contemporary with it. On the east, parts of it were missing but on the south-east it reached and was laid against a north-south wall, considered by St. John Hope to have been built in the fifteenth century. As no trace of it was to be seen east of this wall it would appear to be contemporary with or to post-date it. Beneath the floor, the uneven ground had been levelled with patches of sand.

Below the flag floor ran a small drain. In the north wall of the warming house is a blocked doorway and in this stands a small stone trough. The stone kerb beneath the doorway has been shaped to fall into the drain. C. B. Howdill, in a note to the *Yorkshire Weekly Post* dated 23rd January, 1904, considered that this trough was a foot bath and the drain was constructed to carry away the waste waters. The drain ran south to the south wall through which it passed. A small hole has been crudely chiselled out to allow its passage. South of the warming house the lowermost flags of the drain were noted and described in the second report though they were not then recognised as belonging to a drain. They ran south and appeared to make for the open drain also described in that report. From the north to the south wall of the warming house over a distance of thirty feet the drain dropped seventeen inches. Within the warming house the drain was of very sturdy construction. A raft of clay cut into the deposits below and in this was laid the drain. This consisted of a flag floor fifteen inches wide and mortared flag walls. The internal dimensions showed a depth of three inches and a width of five to six inches. The drain was open except for the flags of the floor which covered it. The drain was not covered by the flag floor in the north-eastern part of the room. It was rising steadily in that direction. The northernmost covering flags were rather thinner than those lying adjacent to them. Thus the drain may have risen through the floor and been open for a few feet at the north. The incompleteness of the floor make this impossible to determine. Stratigraphically the drain is of great importance. In it, covered by the flag floor, some nine feet from the south wall of the warming house was a coin of Charles the Bold of Burgundy, c. 1470. Beneath the drain, in a sand layer into which the drain with its clay bed had been laid, eleven feet six inches from the south wall of the

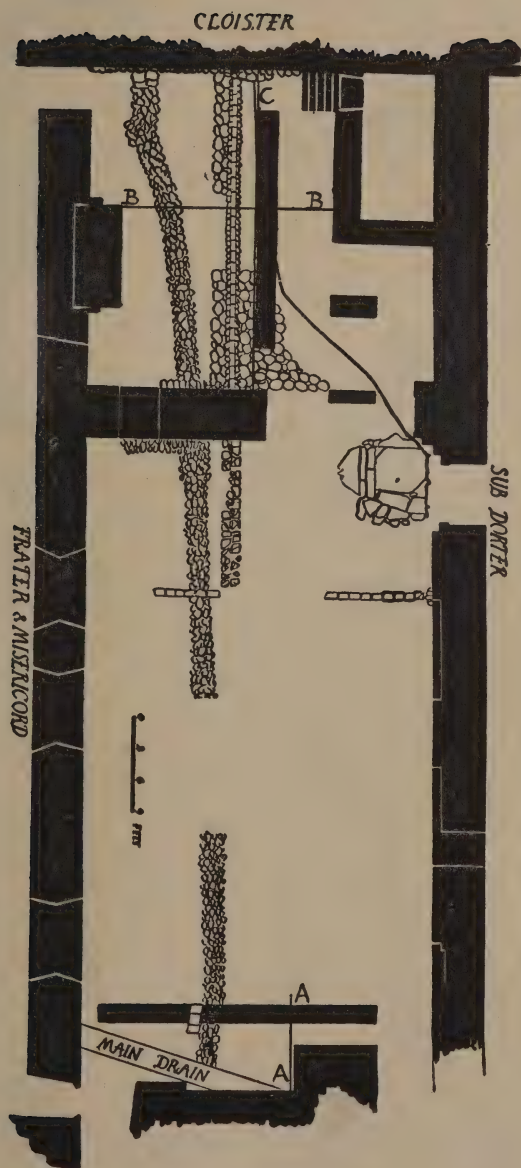


FIG 10. PLAN OF WARMING HOUSE AND COURTYARD.  
NOTE SECTIONS A, B. and C. AND PIPE TO BATH.

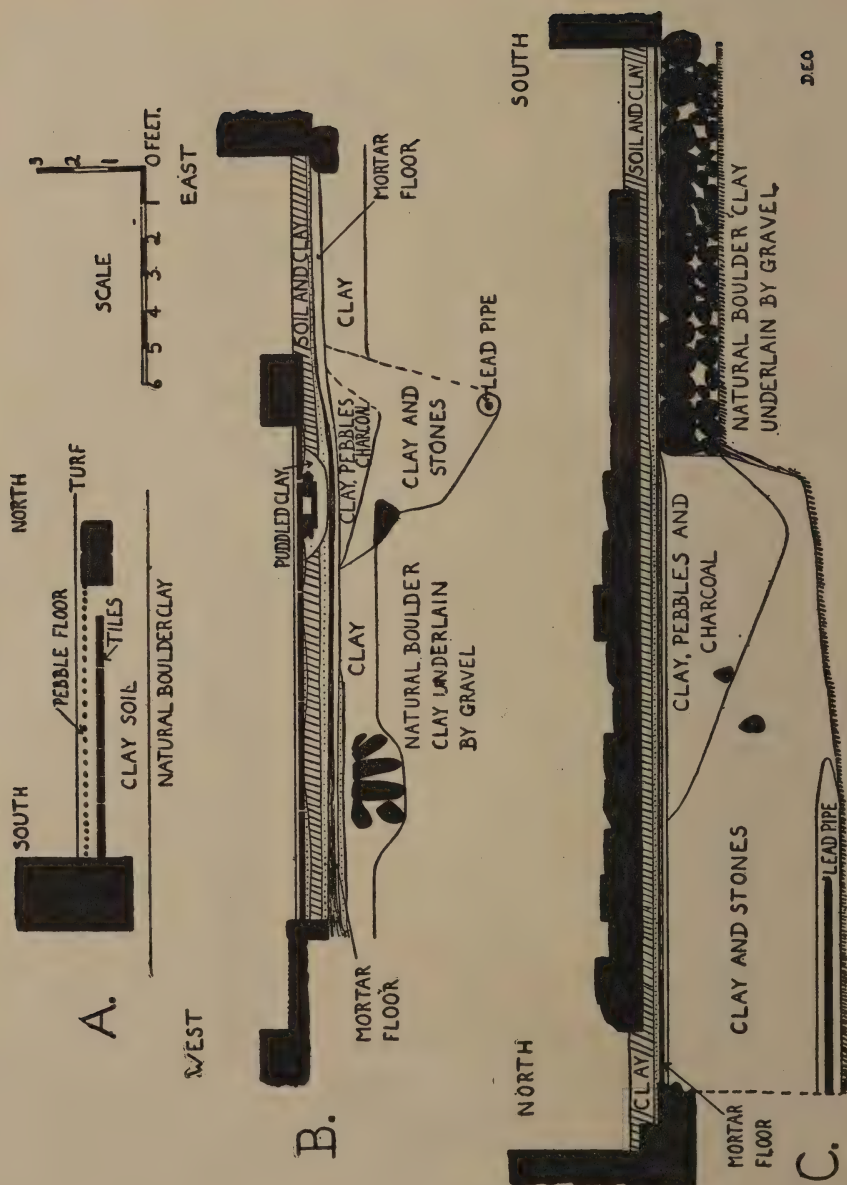


FIG. 11. SECTIONS. A, NORTH OF MEAT KITCHEN.  
 B, and C, IN WARMING HOUSE AT RIGHT ANGLES.

warming house, a groat of Henry V., c. 1420, was found. Thus the drain was not laid when a coin of c. 1420 could be lost but was in use sometime after 1470.

Beneath the flag floor and the inconsistent patches of sand, three to five inches of clay soil with small pebbles extended over the whole room. The same deposit was also found to a depth of six inches east of the fifteenth-century wall. This clay contained occasional fragments of fifteenth-century pottery. Beneath it was an equally consistent layer of sand approximately two inches thick. As it was in the lower part of the sand that the Henry V. groat, above-mentioned, was found, it is clear that the sand, clay and flag floor were all fifteenth-century. There is no reason why the spreading of the sand and clay, the laying of the drain, the building of the wall within the warming house, and of the great fireplace, now visible, and the laying of the flag floor, should not be considered as one operation some time after 1420 but before the 1470 coin was dropped.

Beneath the sand layer was a variable layer of charcoal which rested upon a mortar floor. Both extended from north to south of the warming house. Both passed beneath the fireplace on the west side, the floor sloping downwards at this point and the charcoal thickening to as much as four inches. Both passed eastwards beneath the central wall in the warming house. On the east side of the warming house is a flight of stone stairs—the day stairs to the monks' dorter. These stairs connected with the cloister by a doorway of thirteenth-century style, and were supported at first by solid masonry and, further south, by an arch. The base of this arch is still in position. The masonry attributed by Sir W. St. John Hope to the thirteenth-century, is founded on large cobbles. The mortar floor came up to these cobbles, abutted on to them and covered thinly their surface, just touching the lowermost ashlar stones of the wall. The floor was quite clearly constructed at the same time as the stairs were built. In the gaps beneath and south of the arch, there had been modern disturbance, but in places the mortar floor was seen to extend right up to the sub-dorter wall. From the south side of the thirteenth-century doorway, a few stairs descend westwards into the warming house. They connect with the central wall. As would be expected, the mortar floor extended continuously beneath them. South of the warming house fireplace already described, the mortar was replaced by thick red unglazed tiles. These actually underlay the southern part of the fireplace, which is of such architectural importance that it was not removed in the dig. Thus the exact area of tiling is not known. The tiles doubtless formed the earlier hearth. Adjoining the tiles the mortar floor rested sometimes on sand, sometimes on clay and the clay was burned and reddened by fire.

Beneath the mortar floor there was no continuous floor-covering in the warming house. A relatively small area in the south east was underlain by large cobbles which extended up to the foundation cobbles of the south wall. Where they occurred the mortar floor was at its thinnest. Further north, extending nine feet southwards from the north wall of the warming house was another line of cobbles twenty inches across. At first sight it appeared to be a wall foundation but was seen to be much more irregular. It lay just below the mortar floor which arched slightly over it on the same level of the cobbles on the south side. The western edges of both sets of cobbles were straight and were in line from north to south. On the east both had been removed by a considerable disturbance, and a further disturbance separated them from one another. Thus they were almost certainly continuous and they probably extended some distance to the east. How far east, it is hard to determine for the disturbance bounded them to the east. Beyond, in the north east, no cobbles were to be found. In the north set of cobbles, seven feet six inches from the warming house wall, and placed centrally, was a roughly circular hole, six inches diameter and seventeen inches deep. It was empty except for a light deposit of sand at the bottom. It appeared to be a post hole and the post was probably cut off when the mortar floor was laid. This cobble structure was probably built in the twelfth century, hence its continuation with the foundation cobbles of the wall. It is difficult to consider it a wall foundation as it was much too wide. On the other hand it was much more massive and deep than a normal floor. Its restricted area suggests that it might have been the first fireplace though no traces of burning were seen. Even so, it covered too large an area. On the whole, it is more likely to have been a floor. Sir W. St. John Hope considered the first refectory to have extended from east to west, thereby restricting the original warming house to the eastern half of the present room. This could account for the western limit of the cobbles, though it seems likely that the dividing wall was one of wood. He showed that the alteration to a north and south refectory took place in the twelfth century within a few years of the completion of the first structure.

It has already been noted that a disturbance divided the two areas of cobbles and limited them eastwards. This proved to be a deep V-shaped trench which came obliquely from beneath the warming house doorway, passed beneath the central wall, curved east, made further curves and finally passed out of the warming house at the south east corner, where the twelfth century stones had been disturbed. At the bottom lay a lead pipe encased in a jacket of stiff yellow puddled clay. This pipe, two inches in diameter, made of lead sheets bent into cylinders and soldered, came in from under the doorway. North of this doorway are the

stone niches which held the wash basins of the cloister lavatory. At this point it was four feet six inches below the mortar floor, and five feet three inches below the ground surface. The level fell three inches as the pipe ran south. It then dropped a further foot in the rest of its course. At its extreme south, it entered the stone chamber described in the second report, appearing behind a small hole in the stonework in the north east corner. Thus the stone structure was truly a monastic bath of some kind, fed by waters from the cloister lavatory cistern. Whether it was used for cleanliness, or in the manner described in *The Life of Ailred of Rievaulx* by Walter Daniel<sup>1</sup> is a matter of surmise.

The pipe trench was filled up with a variety of deposits. It contained some pottery, but there was a great quantity of charcoal together with slags of iron, copper and lead. These are described separately in the report. They appeared to have been the sweepings of smelting fires which cannot have been far off.

Thus the succession of events in the warming house appears to be as follows. A limited cobble floor or other structure was built in the twelfth century at the same time as the walls. This was broken through in the thirteenth century to allow a lead pipe to be laid through the doorway from the wash basin cistern supply. The trench so constructed, was curved to avoid the foundations of a new staircase to the monks' dormitory. The pipe was installed, the trench was filled in, the staircase was completed, and a mortar floor was laid across the warming house with a tile fireplace which was set on the west side. In the fifteenth century the entrance to the warming house was blocked, a new entrance was made from the dormitory staircase with a few steps down. A wall was built from the bottom of this southwards to restrict the size of the warming house. The passage so cut off to the east, was available for storage. A new fireplace was built over the old one. The worn floor was levelled out with sand and clay. A stone trough was placed in the blocked doorway and a drain built to take the waste waters to a drip trench or drain outside the warming house. And a flag floor was laid within the restricted warming house. Perhaps at this time the bath, constructed in the thirteenth century south of the warming house (when the lead pipe was laid) was filled up as described in the second report. The infilling may have been earlier, but could not have been later as it was completed before the east to west drip trench or drain was laid. These two major building and flooring operations are adequately dated. The dormitory staircase is of thirteenth century construction and its date is confirmed by a doorway of thirteenth century style. The cloister lavatory, whence came the lead pipe, is also of that period. The warming house drain is

<sup>1</sup> Edited by Sir F. M. Powicke 1950. p.25.

fifteenth century by its coin content, and the central wall and entrance steps appear to be of that century.

#### 4. THE WALL FOUNDATION

The north extension of the wall foundation could have been described with the warming house as it was found beneath the thirteenth century mortar floor. It is convenient, however, to describe it with the southern extension, and it is therefore given separate treatment in this section.

In the 1951 dig a wall foundation was found south of the warming house and it was traced southwards for twenty-one feet. There it was lost owing to a recent disturbance. It was sought and found in the south of the warming house and appeared to pass under the south wall of that building. The complete removal of the warming house floor levels exposed it again, lying beneath the mortar floor. It extended right across in a northerly direction but had a slight twist in it. It quite clearly passed beneath the north wall and must be looked for in the cloister. The southern extension was also picked up and traced southwards in a straight line up to the main abbey drain. This is of twelfth century date, but was restored about fifty years ago. It cut off the end of the wall foundation quite cleanly. South of the drain is the meat kitchen wall and the wall foundation was sought again further south, but no sign was discovered. Thus the wall foundation has been traced for ninety-three feet. It may have carried on north in the cloister. It did not extend farther south. Future excavations must be arranged to determine its full extent, to find if it made an angle and enclosed a building and to check its relations with the present buildings. It clearly passed beneath the two warming house walls and was cut off by the Abbey drain. Thus it was of earlier construction.

The structure of the foundation itself is of interest. In the courtyard south of the warming house, it rested in a deep trench with straight sloping sides and a flat floor. A typical measurement taken thirty-six feet south of the south wall of the warming house showed the trench to cut twenty-one inches down into the boulder clay (whose surface there is twenty-four inches below present ground level) to be fifty-eight inches wide at the top and thirty-six inches at the bottom. The stonework, twenty-six inches wide, lay nearer to the west side than the east. It consisted of five large stones standing almost vertically on their sides with a few smaller stones resting on top of them. Only the three centre stones touched the bottom of the trench. They were built in with very sticky blue clay, but there were a few small spaces between them. Within the warming house the trench was quite indeterminate. The boulder clay surface was far more difficult to find and there were no clear sides or floor to the trench. It is

difficult to give a reason for this unless it was due to surface disturbance during the building of the warming house. The stonework was laid in a precisely similar fashion and this was seen in all six sections cut. It is clear from the photographs shown.

The peculiar construction of large vertical stones, and the occasional gaps and spaces within suggested that the whole structure might have been a field drain. The great length seemed to uphold this possibility. Levels were measured and its stonework was found to be eight inches lower in the middle courtyard than where it adjoined the cloister wall seventy feet north. Field drains of this construction are not known, however, at that period. Its abrupt finish to the south would not be expected and the fact that it was approximately eight inches lower in level than the twelfth century drain which terminates it, shows that it could not have communicated with that drain. Its final determination must therefore be left until more evidence is available.

##### 5. STRUCTURES ON THE NORTH SIDE OF THE MEAT KITCHEN

The trench cut to follow the early wall foundation described above, revealed structures adjacent to the north wall of the meat kitchen. A wall ran east and west, terminating on the west thirty inches from the refectory wall. Its last stone was shaped as a door jamb. It also ended five feet three inches from the monks dormitory wall but looked to have continued further originally. Ten feet from the refectory wall a drain cut through and sloped down steeply southwards into the main drain. It was twelve inches wide and eight inches deep. This probably carried away water from the roof of the small passage or building contained within the walls. This passage was floored with small cobbles which extended over its whole area.

The cobbles were removed and were found to seal some so called "Cistercian" pottery with trailed slip and dipped glaze. They also sealed a late fifteenth century jetton or Abbey token. The main oven of the meat kitchen protruded north and may have been fired from this passage. Beneath the cobbles, in a small area west of the oven a series of unglazed thick red tiles, laid on mortar, were found. They abutted onto the oven. They were similar to the tiles of the thirteenth century hearth in the warming house and were no doubt used for a fire.

The meat kitchen was described by Sir W. St. John Hope as of fifteenth century date. The oven would be part of the original structure and the fire tiles also appeared to belong to this period. At a later date, probably early in the sixteenth century, the small annexe was erected with its containing wall, its cobble floor and its roof. Perhaps it provided a covered way from the Refectory to the passage beneath the monks' dormitory. On the other hand,

it may have been a useful covered storehouse. The pottery and jetton sealed beneath its floor shows it to have been one of the last buildings constructed before the dissolution of the monastery.

## 6. FINDS OTHER THAN POTTERY

**Coins.** Three coins were obtained in places already indicated.

1. Henry V (1413—1422) Groat. *Obv.* HENRIC DI GRA REX ANGLIE Z FRANC. Crowned bust, mullet on r. shoulder. *Rev.* POSVI DEVM ADIVTORE MEVM CIVITAS LONDON. Brooke p. 144 (Pl. XXX, 10).
2. Charles the Bold of Burgundy (1467—77). Double patard struck for Brabant. *Obv.* KAROLVS DEI GRA DUX BG BRAB Z LIM. Shield of arms. *Rev.* SIT NOMEN DOMINI BENEDICTVM AM. Cross fleurée.
3. Abbey Token, Jetton or Casting Counter. Nuremberg mint. Imitation of French type of jetton (XV century). Fictitious legend.

**Iron.** Miscellaneous fragments of iron nails were again frequent. A few complete nails were cleaned and again they measured up to modern sizes. They include a five inch and a three inch sprig and a nearly complete hold-fast; also half of a cupboard door hinge with two holes for attachment and a three and a half inch awl, square in section with a short pointed top to fit a handle. This was the first tradesman's tool to be found at Kirkstall though many have been recovered from Fountains. It occurred in the clay layer beneath the warming house flags.

**Copper.** This includes a small chain and ring and the top portion of a small hand bell from the warming house in the sand layer overlying the charcoal on top of the mortar floor. This bell was very fragile and fragmentary.

**Lead.** Numerous pieces of lead include sections from roofing and strips from windows. Twenty-eight feet of lead piping of thirteenth century date were taken out of the warming house. This was of two inches diameter and was composed of sections of various lengths with large soldered joints. Each section has been made from a sheet bent into a cylinder and soldered. The pipe was encased in clay and the lead was mostly in excellent condition.

**Bones.** These were particularly numerous, especially in the area adjoining the meat kitchen and within the meat kitchen (where the wall foundation had been sought) They included horse, cattle, sheep, pig and possibly red deer. There were very numerous bone fragments of hemispherical shape, flattened on one side and these were clearly the heads of femurs of either cattle or horse which had been chopped off. Perhaps this allowed the marrow to stew more easily from them. Perhaps, on the other hand, they were used for counting in the same way as the jetton, though they were rather crude for such a purpose.

There were two pieces of shaped bone which occurred beneath the mortar floor within the warming house. One was a narrow splint or skewer seven inches long. The second, four inches long, was filed so as to have a rectangular box-like section. One end was cut off straight and the other hacked so as to give a sharp chisel or gouge edge. No suggestions are made for its probable purpose.

**Tiles.** The usual series of floor tiles, some square, some shaped for a pattern were found. Some were plain. One, arc-shaped, was printed with a geometric pattern in white slip. All were glazed. There were, in addition, some much larger, thicker tiles of various sizes, unglazed, which were used both in the warming house and adjacent to the meat kitchen oven to floor the fires. A typical tile is ten and a half inches by eight inches and two inches thick. Well oxidised on the surface, the body is grey.

**Shellfish.** A number of cockles and a few oysters were found in and near the meat kitchen. The shells were similar to those found in previous years.

**Marble.** A small spherical marble was found unstratified in the meat kitchen. It appears to have been made of a hard pinkish earthenware and is three-quarters of an inch in diameter. It may belong to post-monastic times.

**Flints.** A number more small flint flakes were found, this time within the warming house. They were all fairly close to the fire place and occurred in all deposits between the flag floor and the mortar floor. Thus they were probably used to light the warming house fire. This suggests that the flint flakes and core found in the 1951 excavation south of the warming house were of monastic origin.

**Metallic Slags.** In the thirteenth century trench in which the lead pipe was laid were slags of iron, copper and lead with charcoal. These slags have been examined by Dr. Haynes of the Leeds University Metallurgy Department who has made analyses and whose report is appended.

## **THE POTTERY,<sup>2</sup> by H. E. Jean Le Patourel.**

### **Twelfth Century.**

After three seasons of excavations, the pottery from Kirkstall is beginning to form an intelligible pattern. While there is still a great deal of detail to fill in, the wares so far show a coherent development that fits in well with other material from this part of the West Riding. Several cooking-pot rims and part of a bowl found this year are in similar ware and technique to the rapidly growing body of twelfth-century pottery from the Riding. The

<sup>2</sup> References to earlier reports (*Kirkstall Abbey Excavation, First Report*, 1950, Thoresby Society, 1951, and the *Second Report*, 1952) are given in the text as *Kirkstall 1950* and *Kirkstall 1951* respectively.

rims of two small cooking-pots in this fabric have parallels at York, Wetherby and Almondbury, which last yielded the remains of over 200 such pots of various sizes from the site of the twelfth-century castle. Cooking pots in a rather similar hard gritty ware, though of somewhat different shape, have been found on more than one occasion in pre-Conquest contexts in York, and it is likely that the twelfth-century series will prove to be a development from this early pottery. More tenth and eleventh-century material, however, is needed before a definite connection can be established. One cooking pot found this season in the courtyard (fig. 12 no. 5) seems to mark the transition from the twelfth-century types to those of the next century. While in fabric and shape it resembles the earlier vessels, in its comparatively heavy body, in the absence of trimming round the base, and above all in its rim-section, it is much more like the pottery found in the lowest level of the Warming House.

No pitchers or jugs in this ware have yet been found at Kirkstall, though examples from both Rievaulx and Almondbury show that the fabric was in fact used for pitchers as well as for cooking pots and bowls. Bowls have up to now formed a small minority of finds on all twelfth-century sites. The first example from Kirkstall is a very large bowl with a finger-printed rim (fig. 12, no. 1)—an unusual feature in this class of ware.

### Thirteenth Century.

The excavation of the Warming House, though the quantity of pottery found was not large, was very useful in giving us, for the first time at Kirkstall, two fixed points of chronology, the mortar floor and the fifteenth-century alterations (above, pp. 30-35). There seems no reason to doubt that the mortar floor is contemporary with the doorway in the north-east corner of the room and that they were constructed together at some time in the thirteenth century. Apart from the ground in the immediate vicinity of the lead pipe, which yielded a certain amount of metal slag, all that was found in the made ground beneath this mortar floor was the remains of a few nails and a certain number of potsherds. None of this material appears to belong to the twelfth century. The only pottery of that period known to have been used in this part of the county is the distinctive and easily recognisable ware described in the preceding section. While this certainly survived into the thirteenth century, the types of vessel found below the mortar floor have not so far been found on twelfth-century sites in the neighbourhood. Had the new floor been laid early in the century both types might be expected to occur together. In fact, though a certain amount of twelfth-century pottery has been found elsewhere in the Abbey, it was not found at all in the Warming House. It seems reasonable to

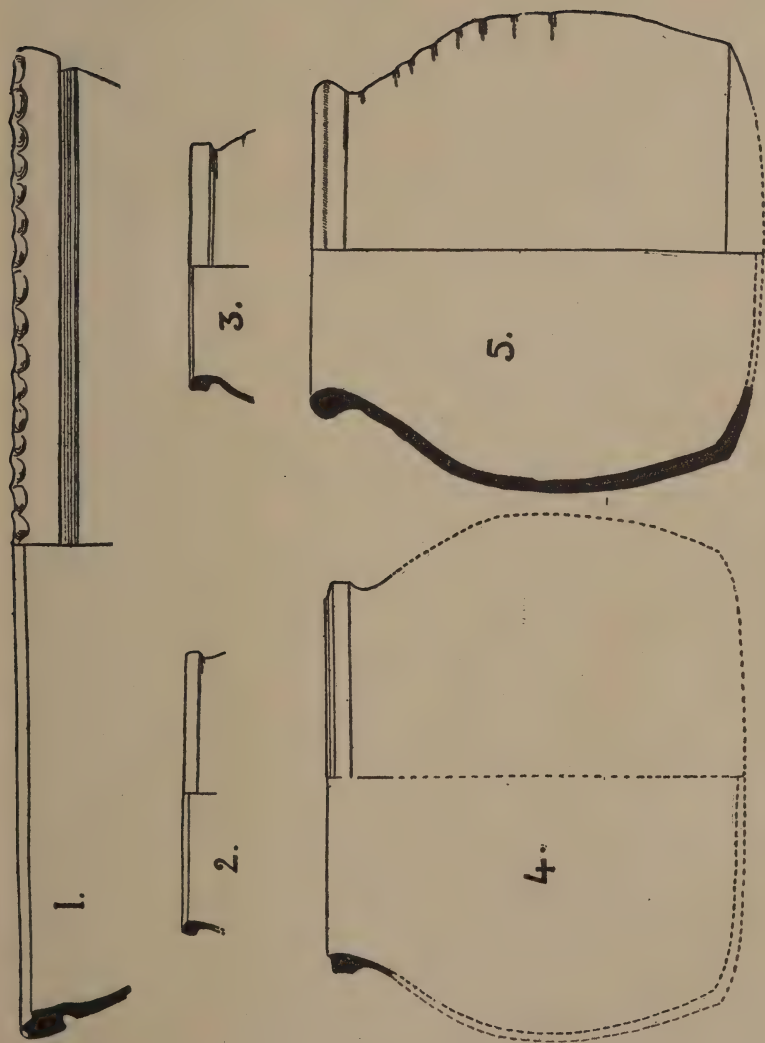


FIG 12. TWELFTH CENTURY POTTERY. Scale  $\frac{1}{4}$

suggest therefore that the work was done not earlier than the middle of the century, and that we are justified in dating this group of pottery to the middle or late thirteenth century. The transitional form from the courtyard (fig. 12, no. 5) may then belong to the early years of the century.

The Warming House pottery consists of the remains of several bowls and a few pitcher sherds. All are in a coarse ware, well gritted with river sand, and all, save one pitcher, are a good deal thicker in body than was usual in the preceding century. Fig. 13, no. 7 is so similar in style and ware to a pan found last year (*Kirkstall 1951*, fig 8, no. 15) that the two are likely to be contemporary. The partially glazed bowl (fig 12, no. 6) is of a shape in common use at the Abbey, and indeed in the region. Remains of a number of similar vessels were found both last year and this (e.g. *Kirkstall 1951*, fig. 8, no. 11). There was also a further sherd of a cooking pot found last year (*Kirkstall 1951*, fig 8, no. 18), in a hard purplish-grey fabric, a coarse and earlier version of the grey ware found at Kirkstall in deposits dating from the fifteenth century onwards, and a good deal earlier in the city of York.

The pitcher sherds are partly covered with a pleasant light green glaze. Both fabric and glaze are similar to that of the large pitchers (*Kirkstall 1951*, fig. 7, nos. 9 and 10) found last year. It is impossible, however, to say for how long the use of such wares persisted alongside later fabrics.

Decoration, where it exists at all, is simple. Fig. 13, no. 8 has small self-coloured pellets under the glaze, and Fig. 13, no. 11 has criss-cross combing. Applied strips in cream-coloured clay were used, sometimes further ornamented as in fig. 13, no. 12 or on the large pitcher found last year (*Kirkstall 1951*, fig 7, no. 10).

While it must be strongly emphasised that the total body of pottery available for study in the North is insufficient to support any but the most tentative of generalisations, it seems, from such evidence as we have, that the thirteenth century saw a more strongly marked local divergence of pottery types than the twelfth. Thus while there are common types of twelfth century pottery diffused over a wide area, perhaps over the whole of north-eastern England and south-eastern Scotland, in the thirteenth century at least three separate regions can be distinguished even within the boundaries of Yorkshire. At Kirkstall, for instance, the most usual ware is a development of that of the twelfth century, a coarse, well-gritted ware used alike for pitchers and for cooking vessels. Pottery from Ilkley and from a number of villages in the neighbourhood of Leeds is of the same kind and so is the very small quantity of thirteenth-century pottery from Castle Hill, Almondbury. York and Rivaux, on the other hand, show a quite distinct development; and the coarse ware of the Scarborough region, whose development has been worked out in great detail by Mr. Brewster, forms yet a third

group. Assuming, as seems reasonable, that pottery fragments could only be deposited in the Warming House at times when floors were actually being laid, it follows that the pottery found here must have been roughly contemporary with one or other of the two alterations. On this assumption it is impossible to assign a fourteenth century date to anything found in the Warming House; and therefore we cannot say at present whether these local divergences persist into this century. But pottery found in York which can be dated to the fourteenth century, and which is unlike anything so far found at Kirkstall, suggests that they may have done so. By the fifteenth century we again find shapes and wares with a universal distribution over the whole north-eastern region.

### Fifteenth and Sixteenth Centuries.

In the upper layers of the Warming House the coarse gritty ware gives way to a hard grey or purplish-grey fabric. Sometimes this still contains a high proportion of sand, but more often it is of the smoother consistency that is found so frequently in the North East from the fifteenth century onwards. Nothing like complete vessels were found this year, either in the Warming House or elsewhere on the site, but the pitcher sherds suggest large heavy vessels of the type found in 1950 (*Kirkstall 1950*, fig. 4, no. 1) or of the style found at Cambokeels<sup>3</sup>. Glaze is usually brown, but even large jugs were sometimes unglazed, or with occasional patches of glaze, a characteristic found elsewhere in England at this time. As at York, the base angle of smaller jugs is often splayed to form a foot, and sometimes frilled in the manner of later stoneware. The two small bowls (fig. 13, nos. 14, 15) have been assigned to this period on account of the position in which they were found, but from their style they could belong to the fourteenth century.

Part of a beaker or mug in brown glazed "Cistercian ware," elaborately decorated with cream slip, was found under a cobbled floor outside the meat kitchen (cf. p. 37 above), that is in circumstances that provide reasonable certainty that vessels of this sort were in use well before the Dissolution (fig. 13, no. 16).

We have now a frame-work on which to build a pottery sequence for the period of the Abbey's occupation; though a great deal more material is needed, especially for the fourteenth century, before it can be considered in any way adequate. It seems, on present evidence, that the pottery from Kirkstall, at least that produced during the thirteenth century, is not closely related to that of other Cistercian Abbeys of the North East, but rather to the pottery of its own immediate neighbourhood.

<sup>3</sup> *Archaeologia Aeliana*, 4th Series, XXVII (1949), pp.200-204.

## DESCRIPTION.

1. Large bowl: pinkish-fawn hard gritty ware with characteristic twelfth-century texture: thick angular rim, strongly finger-printed: possibly intended to take a lid.

2. Small cooking-pot of similar ware: outer surface shows blackening.

3. Small cooking pot with characteristic angular rim. The paste is rather more gritty than usual.

4. Large cooking pot of similar ware.

5. This cooking pot shows some features of both twelfth and thirteenth century vessels. In ware, texture and shape, as well as in the characteristic rilling of the upper walls, it resembles the usual twelfth century cooking pot. On the other hand in its rim and heavy body it is like the pots from beneath the thirteenth century mortar floor of the Warming House. The base is rounded and shows no signs of the trimming characteristic of the twelfth century cooking pots.

6. From below the mortar floor. Hard, gritty ware, red surfaces. There is a thick green glaze on the interior, extending over the base in an irregular line and for a short way up the sides. The base is slightly rounded. Compare *Kirkstall 1951*, fig. 8, no. 11.

7. From below the mortar floor. Coarse grey ware, red surfaces, with a wash of cream slip over the inner surface. Apart from the absence of glaze it resembles *Kirkstall 1951*, fig. 8, no. 15 and may have had a similar handle.

8. Part of a pitcher from below the mortar layer. Grey gritty ware, thin walls and applied pellets under an olive green glaze.

9. Part of a strap handle. Grey gritty ware: light green glaze: stamped semi-circles along both sides.

10. Probably of the thirteenth century. Hard gritty ware: grey core, red surfaces. A patchy cream slip runs down the centre, through which small circles have been stamped. Both edges are slashed. The glaze is transparent.

11. Coarse gritty ware: grey core, red surfaces: olive green glaze over criss-cross combings going deep into the clay. From beneath the mortar floor.

12. Grey gritty ware, with strips of applied cream clay under light green glaze. Double semi-circles, sometimes overlapping, stamped on strips. Save in the stamped pattern it compares closely with *Kirkstall 1951*, fig. 7, no. 10. The sherd may be part of a similar pitcher. It comes from the fifteenth century level in the Warming house, but is probably earlier.

13. Fourteenth century French pottery. Compare *Kirkstall 1950*, fig. 4, no. 5. The paste is smooth, hard and white, with applied self-coloured strips under a transparent glaze. Panels of dark brown are ornamented with cream pellets. The two lines have been lightly incised before the application of the strips.

14. Small bowl in gritty, purplish-grey fabric with internal green glaze splashing over the rim which has light irregular finger-marking. This and no. 15 are from the same level as the Henry V groat, but are probably earlier.

15. Bowl: similar ware and glaze, but with thinner walls. The rim is lightly stabbed at irregular intervals.

16. "Cistercian ware" mug. Cream slip on dark brown body. There may have been two handles.

*METALLIC SLAGS*, by R. Haynes, B. Met., Ph. D.

**Thirteenth Century Slags from Kirkstall Abbey  
The University of Leeds**

**Department of Coal Gas and Fuel Industries with Metallurgy.**

**The Iron Slag.** The analysis of the slag is as follows:—

	Sample 1		Sample 2	
Acid Soluble Iron	2.37 2.34	} 2.35%	2.66 2.69	} 2.67%
Acid Soluble Copper	0.96%			
Acid Soluble Aluminium	2%			
Insoluble residue	91.46%		91.00%	
(composed of silica, $\text{SiO}_2$ + insoluble silicates)				

The iron, copper and aluminium were present as oxides. Allowing for this fact, the sum of the percentages of the constituents in sample 1 is about 99.7%. This indicates that all the major constituents are accounted for.

The amount of silica in the insoluble residue from sample 2 65.90% (i.e. 65.90 % of the residue). This includes both free silica and silica in the form of silicate. The remainder of the insoluble residue is oxides of base metals. The appearance of this material indicates the presence of a considerable amount of iron: approx. 22.4% iron oxide, 11.7% aluminum oxide.

It is probable that the ore was smelted directly with charcoal to produce the metal and a slag. The idea of using fluxes to produce a slag with desirable properties is comparatively modern. Thus it seems that the composition of the slag may allow broad conclusions to be drawn about the composition of the ore. The chief constituents of the slag are iron oxides and silica which suggest that the ore consisted primarily of these two oxides. The ironstone deposits in this area consist of a fairly pure mixture of fine particles of iron oxides and silica (i.e. they are present as free oxides not as iron silicate). These deposits are not worked at the present time due to low iron content, of the order 30% (Modern practice requires the ores to contain more than about 40% iron, for the extraction to be carried out economically). It seems quite possible, therefore, that ores from this locality were used.

The presence of copper in the slag is unusual, as iron ores are usually free from other metals. It seems likely, therefore, that smelting was carried out in one furnace for iron, bronze, and lead. (The use of separate equipment for different metals has only come about during the great expansion of the metallurgical industry during the past century).

#### The Lead Slag.

The slag consisted of two constituents, metallic lead 76%, and a powdery constituent 24%.

The materials have not been analysed quantitatively but qualitative analysis of the metal shows the presence of small amounts of iron and copper.

#### The Copper Slag.

The material was prepared for examination by grinding, after large pieces of charcoal had been removed. This showed that the material consists of two components. One of these is of an earthy nature and can be powdered easily. The other component is a hard brittle metallic material which is difficult to grind. The two components were separated with a fine sieve and were analysed separately. The amounts of the two components are 89.5% powder and 10.5% hard constituent.

### ANALYSIS

December 1952.

#### Test of 13th Century Copper Slag

	Cu	Sn	Pb	Acid Soluble Fe	SiO <sub>2</sub> in Insol. residue	Loss on ignition	Insol. + SnO <sub>2</sub>	Zn (?)
<b>Powder</b>								
1	37.52			0.74	17.15		24.6	
2	(38.12)			0.64	17.91		23.9	
3	37.53	7.75	2.81					
4	37.56	8.26	2.82	0.52	19.10			
5							4.34	
6							4.34	
<b>Hard Constituent</b>								
1	69.5	30.3	(1.0)	0				
2	68.4	27.5						
3	66.2	28.3						
4	67.1	16.0						
<b>Foil</b>								
1	89.15	6.07	1.17	0				4.89
2	87.1	4.21						

The big scatter in the results of the analyses of the hard constituent and the foil is due to the fact that representative samples of the materials could not be obtained.

The most important metallic constituents of the materials are copper and tin. The large amount of tin in the slag material and also the composition of the foil strongly suggest that the smelting was being carried out with the intention of producing bronze. Bronze would be a more desirable product than copper since it is stronger and tougher than copper and because it remains both malleable and ductile, like copper.

The copper and tin ores being smelted were oxidised, i.e. the copper mineral was either oxide, carbonate or silicate and the tin mineral oxide. This material was smelted with charcoal, pieces of which were embedded in the slag material. The oxidised material would be reduced and the metal would trickle through the furnace charge and collect in the bottom of the furnace.

It seems quite possible that a shaft furnace would be used. This is a simple type of blast furnace in which the blast is introduced by means of bellows. This type of furnace was used before the 1939—1945 war by the natives of Malaya for smelting tin ores. Similar furnaces were in use in Japan less than a century ago for smelting copper, tin and lead. Now-a-days very high grade oxidised copper ores are sometimes smelted in a blast furnace, as in the Belgian Congo, but this is uncommon because leaching is usually more economic. However, it reflects on the development of the smelting process, and suggests that the shaft furnace was probably used in earlier times. This hypothesis is supported by T. A. Rickard in the book "Man and Metals," Volume 1, Chapter 3, page 113 et seq.

The high copper and tin contents of the slag suggest that the material may be partially smelted charge rather than a true slag. To test this hypothesis 100 gms. of slag powder and 100 gms. powdered charcoal were mixed and heated to between 1300° C. and 1400° C for some time. Some reduction occurred but the globules of metal which were formed remained suspended in the mixture. This may be due to the finely divided form of the mixture. A mixture of ore and lumps of charcoal might have allowed the metal to agglomerate.

The compositions of Oxide Copper Ores from Arizona are as follows:—

**Table I**

Locality	Cu	SiO <sub>2</sub>	FeO	MnO	CaO
Longfellow .....	38.80	11.15	10.40	—	—
" .....	21.67	17.25	—	7.43	—
" .....	11.17	26.80	13.76	7.47	—
Coronado .....	21.95	48.90	12.09	—	—
" .....	11.17	67.00	8.88	—	—
Old Dominion .....	15.17	35.3	28.7	—	22.2

Arizona Blast Furnace Slags, of the same period are typified by the following analyses.

**Table II**

Smelter	Cu	CuO	SiO <sub>2</sub>	FeO	MnO	CaO	MgO	Al <sub>2</sub> O <sub>3</sub>	S
Copper Queen	2.10	—	24.67	44.85	0.39	10.92	1.75	15.57	0.28
" "	0.15	1.02	30.06	53.36	11.10	—	—	—	—
Detroit	—	—	34.34	32.27	8.05	10.13	2.30	11.64	—
"	1.82	—	29.50	37.08	1.13	9.02	7.44	14.07	0.30
Prince	1.64	—	27.16	34.62	0.49	17.42	3.51	14.70	0.33
Old Dominion	—	3.76	27.23	51.30	1.65	5.14	2.54	5.22	—
United Verde	0.18	2.59	35.79	37.89	—	12.98	0.75	8.29	—
Bisbee	1.32	—	28.0	29.0	—	9.0	—	27.0	—

H. O. Hofman and C. R. Hayward "Metallurgy of Copper," p. 247. (McGraw-Hill Book Co., N.Y., 1924).

The analogy between the copper content of the first ore cited in Table I above and the Kirkstall slag is striking. The copper contents of the Arizona slags, Table II, in no case exceeds about 3% and it seems probable that, allowing for an inefficient smelting process, the slag produced by the thirteenth century copper maker would not exceed about 10% copper. This data suggests that the copper slag was partially smelted ore.

The hypothesis receives support from the large pieces of charcoal which were embedded in the material and the earthy nature of the material. It is probable that the charcoal would have burned away by the time the slag had reached the well of the furnace. If the material had passed through the very hot smelting zone of the furnace probably it would have either melted or the particles would have fitted together as in the iron slag, to give a hard, brittle, cindery mass.



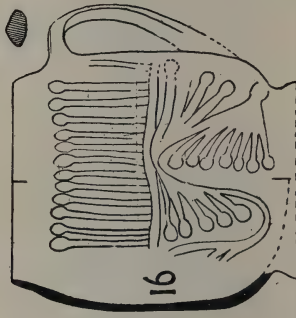
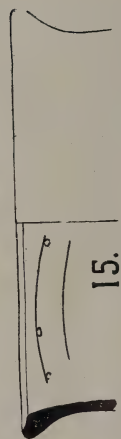
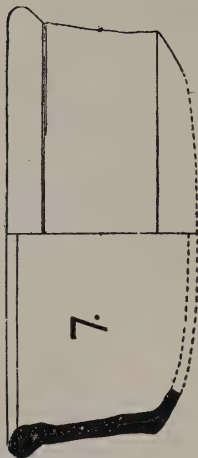
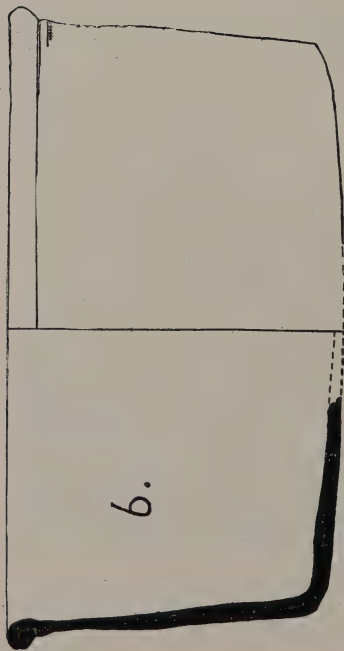
(a) WALL FOUNDATION BELOW NORTH WALL OF WARMING HOUSE.

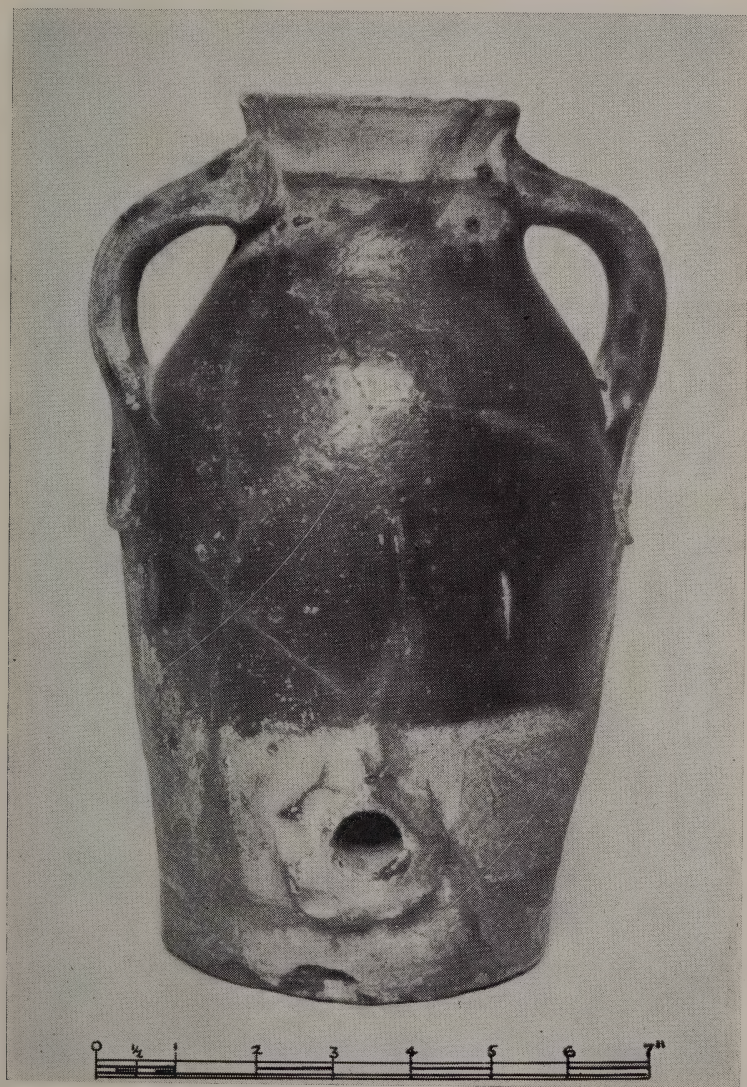


(b) WALL FOUNDATION IN TRENCH SOUTH OF WARMING HOUSE.

*Copyright: Leeds City Museums.*

P.T.O.





A KIRSTALL SIXTEENTH CENTURY PITCHER

*Photo: John Armitage, F.R.P.S.*

# CLOISTER

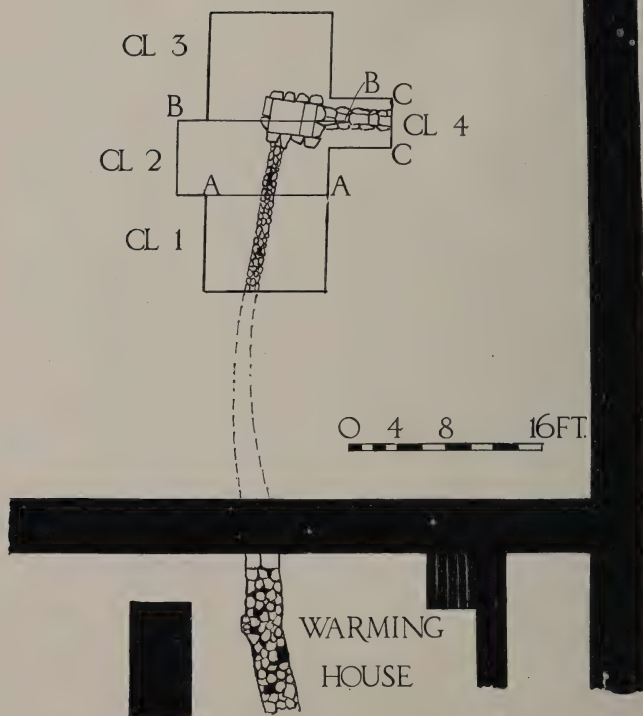


FIG. 14. PLAN OF SOUTH EAST OF CLOISTER AND NORTH OF WARMING HOUSE. Note Sections A, B and C.

# Kirkstall Abbey Excavations

4th REPORT 1953

by L. ALCOCK, M.A. and D. E. OWEN, Ph.D.

## 1. INTRODUCTION (D.E.O.)

THE 1953 season's dig at Kirkstall Abbey was more ambitious than those of previous seasons, for the nucleus of volunteers was augmented by a group of students who worked on the excavations for three weeks as part of a Field Training Course in medieval archaeology. Mr. Leslie Alcock took charge, and he was assisted by Mrs. J. Le Patourel and Dr. David Owen. The 1951 and 1952 seasons (See 2nd and 3rd Reports<sup>1</sup>) had brought to light a line of masonry set in a foundation trench which ran beneath the north and south walls of the warming house, thus pre-dating their construction. It was, therefore, decided to dig a trench in the cloister garth in the hope of tracing the masonry further to the north, and of identifying its purpose.

In addition, new excavations were planned and carried out in the sub-dorter and the refectory, the former to investigate the use to which that room had been put, and the latter to check the order of building and of major alterations suggested by St. John Hope<sup>2</sup>. The objects of all three excavations were achieved and many important small finds were made.

## 2. THE CLOISTER (D.E.O.)

At first a trench, C.L.1, was put down. This was followed by a further trench, C.L.2, to the north, and a third, C.L.3, further north still. A small square trench, C.L.4, was taken out east of C.L.2, and the baulks between C.L.2 and C.L.3, and between C.L.2 and C.L.4 were finally removed.

Beneath the turf throughout was a moderately uniform layer of black soil, probably a fairly recent importation, underlain by a browner and more rubbly soil containing 16th century pottery. A deep modern disturbance cut in on the south of C.L.1. This was basin-shaped, and full of loose stones, and marked the site of a cherry tree which was removed some years ago. A second, straight sided, cut into the west of C.L.1, whose origin was not explained. Covered by the rubbly soil, but protruding into it in C.L.2 and C.L.3 was a rectangular stone structure described in detail below.

Beneath the rubbly soil were patches of cobbles. These also yielded 16th century pottery, and appeared to date to the

<sup>1</sup> *Kirkstall Abbey Excavation, Second Report 1951 and Third Report 1952* (Publications of the Thoresby Society).

<sup>2</sup> *Architectural Description of Kirkstall Abbey*. By Sir W. H. St. John Hope and John Bilson. (Publications of the Thoresby Society, vol. XVI, 1907).

time of the Dissolution. These were underlain by a more uniform layer of yellow clay with stones which also contained fragments of 16th century pottery.

Beneath the yellow clay was a layer of charcoal varying in thickness between one and four inches. It was cut into by many disturbances, described below, and it rested always on weathered boulder clay. Its top was fairly even, but its under surface filled runnels and channels which, however, made no definite pattern. In places the clay beneath the charcoal was reddened with heat, though it was never baked. Thus it would appear that the charcoal, when thrown into this position, was hot but that it cooled rapidly. Enclosed in the charcoal was a great quantity of iron slag in lumps varying in size from a pea to a cricket ball, and larger. No other metallic slags were found. A brief report on the iron slag by Dr. E. Simister, Chief Chemist of the Kirkstall Forge is appended. Thus the charcoal layer appeared to be the sweepings of a small furnace or bloomery, which could not have been on the site, for the clay floor was never baked, but could not have been many yards away, or the charcoal would have had time to cool. Sherds of pottery were contained in the layer. Fortunately the latest age of the layer can be dated stratigraphically with certainty to the second half of the twelfth century. Thus we are presented with the picture of the monks arriving at the site, bringing in iron ore, and smelting it to provide iron for the masons' and carpenters' tools, or alternatively of iron smelters on the site before the appearance of the monks. This seems the less likely, for ore does not occur within the immediate vicinity, and a valley site is most unusual for a bloomery. There is plenty of evidence for monastic forges in the middle ages, but a twelfth century monastic bloomery is much more unusual. The stratigraphical dating of the charcoal layer is bound up with the line of masonry which provided the object for the dig. In C.L.1 and C.L.2, the layer was cut by a north and south foundation trench containing large stones, built in a similar fashion to those described in and south of the Warming House. (Fig. 14). There could be no doubt that this was a direct continuation of this structure, referred to erroneously in 1952 as the wall foundation. As this was seen to pass beneath both north and south walls of the twelfth century warming house, it was clearly built well before the end of the twelfth century. As it cuts the charcoal layer, the latter was earlier. A bloomery or furnace in the cloister is not to be expected. A small temporary furnace on the site before it was laid out might easily have occurred.

The stone structure was narrower than that seen in the warming house and to the south, and it was making slightly east of north. Its form was precisely similar, however, for it consisted of large stones set upon their edges along the trench, tilted towards each other, and capped by smaller stones. Be-

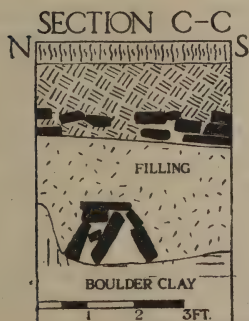
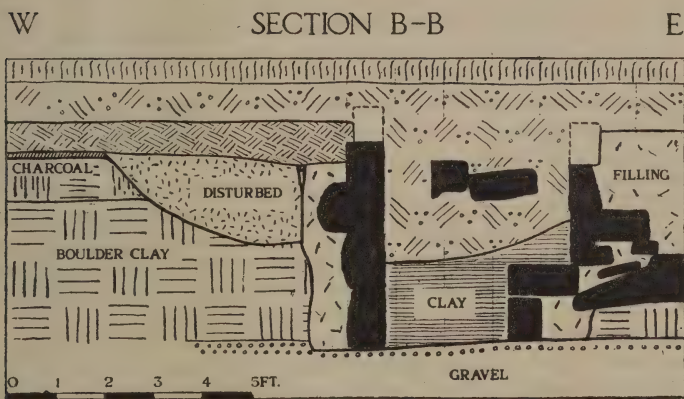
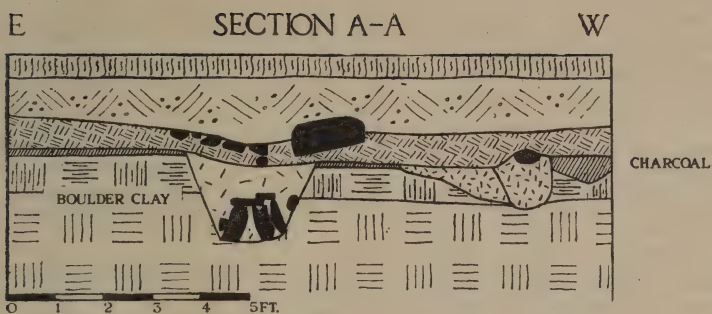


FIG. 15. SECTIONS A, B AND C

tween the stones were gaps and soft sand, and in places, areas of stiff clay. The trench was clean-cut and steep-sided, and its floor was deeply stained with iron. Its level in C.L.2, south section (Section A, Fig. 15) was twelve inches less deep than in the north of the warming house, showing a fall southwards of one in thirty. This fall is greater than was recorded further south in 1952. At its northern extremity, this structure was built into the side of a stone cistern already mentioned and described below, and clearly formed an overflow soak-away for its waters.

The stone cistern (Fig. 17) was seen to stand upon glacial gravel which underlies boulder clay (Section B, Fig. 15). Its floor was compact, iron-stained and impervious. Its sides were composed of large stones well faced and squared on the inside, but very rough on the outside. The internal dimensions of the base were 2ft. 9ins. by 2ft. 8ins.; 1ft. 6ins. above the floor on the east side was a stone step 13ins. wide, and the upper part of the cistern was 2ft. 9ins. by 3ft. 9ins. Some of the stones were slightly displaced. The total depth of the stonework on the north and south was 4ft. 1ins., and on the west 1in. greater. On the east one stone was missing, but the other stood higher, and gave a depth of 4ft. 6ins. Several large stones which appeared to have formed a top course, were found pushed roughly into the cistern which was probably originally about five feet deep. Outside the stones, earth and clay were packed into the foundation trench. This also cut the charcoal layer.

On the south side, between two stones of the third course was a small hole which opened outward. On either side of this, two flags were placed on their edges, leaning inwards and covered with smaller horizontal flags. Between the flags was very loose sand. This was the outlet for water into the soak-away.

The soak-away (Section C, Fig. 15) was built before the north and south walls of the warming house, for it was beneath them. It was built right into the side of the cistern and formed a part of it. Thus, the cistern pre-dates these walls, and is of twelfth century (or possibly pre-monastic) date. It was filled with a layer of soil with large moulded stones, probably pushed from the top layer, which rested on very wet bluish soil. Lying almost on the bottom were the broken pieces of a sixteenth century pot, illustrated. Therefore, the cistern was used throughout monastic times, and is almost certainly of monastic origin.

The inlet was found on the east side below the level of the step. Once more it was a stone-built structure resting in a wide and deep foundation trench in the boulder clay. Large stones, resting on their sides, were tilted together and covered by other large flags. On the floor of the trench between the flags was a layer of rubbery clay. Above this were many gaps, and water seeped through after rain. The flags underlay the step of the cistern which was built to rest upon them. The

actual inlet hole was not obvious, but water would clearly seep through pronounced gaps between the stones. The level of the floor of the trench was two feet below that of the overflow, and this is to be expected if the cistern was to hold water. The inlet came from the east, and it seems possible that it was built to catch the waters of a stream which, after the dissolution, undermined the north transept and the north side of the tower.

This monastic cistern, filled by a soak drain and having a soak-away to release surplus waters is an interesting and unusual feature. It was built askew to the cloister, but its position in the south east corner of the cloister garth makes it adjacent to the lavatorium containing the wash basins of the south cloister. It seems possible that it was the first supply of water and may have been retained when water was directly laid to the taps, to provide for an emergency. Freeze ups probably occurred even in monastic times.

In the eastern side of C.L. 4 flagstones resting on the filling of the inlet trench may be the outside edge of the cloister footings.

There were certain other intrusions into the charcoal layer. In C.L. 2 south west of the cistern was a pit nearly two feet deep. At first it appeared to be part of the foundation trench of the cistern, but was later seen to be separated from it by a narrow strip of charcoal. It contained clay, charcoal, slag and scraps of burnt clay and burnt stones and several small lumps of sticky white clay.

This was cut into on the north by another intrusion, circular in plan. It was a hole cut down one foot into the boulder clay, and filled with tightly packed cobbles. Its upper surface protruded nine inches above the charcoal layer like an island and contained a very large stone. It may have been the foundation for some heavy object. Two small irregular intrusions cut the charcoal in C.L. 3 and were filled with small pebbles.

Thus the sequence of events in the south eastern corner of the cloister divides naturally into two phases. The one concerns the happenings before the building of the cloisters, probably during the foundation of the abbey. The other covers the period of dissolution. In the first phase the bloomery was in operation and the charcoal layer formed. Then a permanent supply of water was needed and the cistern was built with its inlet and its soak-away. This was obviously much too elaborate for a small forge which may have stood near the bloomery and for which a simple stone trough would have sufficed. The cloisters were built and used for nearly four hundred years. At the dissolution, the cistern was damaged and filled up, the cloisters pushed over and cobble areas roughly laid, perhaps to assist the demolition men.

### 3. THE SUB-DORTER (L.A.)

A square was opened up in the western half of the north bay of the sub-dorter, where the high level of the modern ground surface promised a good depth of stratification. It was quickly found, however, that this high surface was due entirely to tipping during the 1895 restoration of the Abbey; below it lay holes for the scaffolding put up at that time. The scaffold holes cut into two rock-filled ditches, or soak-aways. The earlier of these contained a fragment of stoneware, and is therefore probably post-Reformation; the later ditch is dated to the 19th century by a clay pipe. It seems likely that these soak-aways were built when the sub-dorter was in use as a cow-byre, as it appears, for instance, in a sketch done by Turner in 1815

The soak-aways cut down through a layer of clay and gravel, which in turn overlay weathered boulder clay. This clay and gravel layer was the make-up of the monastic floor, but of the floor itself, whether of mortar, tiles or flags, there was no sign. Finds, too, were very scarce.

Excavation, then, has failed to show the function of the sub-dorter in monastic times.

### 4. THE FRATER (L.A.)

Any examination of the frater must start from St. John Hope's account of it in his *Architectural Description*. There he deduced from the chamfers in the string course inside the north wall of the kitchen, frater and warming house that the original intention had been to light a frater ranged along the south side of the cloister, and flanked by a kitchen and warming house narrower than those which stand on the site today<sup>3</sup>. This east-west frater had later been replaced by one running at right angles to the cloister; out, that is, to the south, where there was unlimited room for expansion to accommodate the increasing number of monks. That the Kirkstall frater had originally been laid out on an east-west orientation after the fashion of the Benedictine and other orders, and that the great popularity enjoyed by a Cistercian house in the late twelfth century had necessitated an expansion to the south, were clearly historical ideas of great importance.

Unfortunately, the evidence cited by St. John Hope was undoubtedly ambiguous. The arrangement of the windows in the south wall of the kitchen, as two balanced pairs of longer and shorter lights, argued that the kitchen had from the first been laid out to its present dimensions. Again, the bonding of the south walls of kitchen and warming-house with the west and east walls of the north-south frater suggested that the latter building was also in its original form. Further evidence was required to sustain St. John Hope's hypothesis.

<sup>3</sup> *Architectural Description*, pp.51-3.

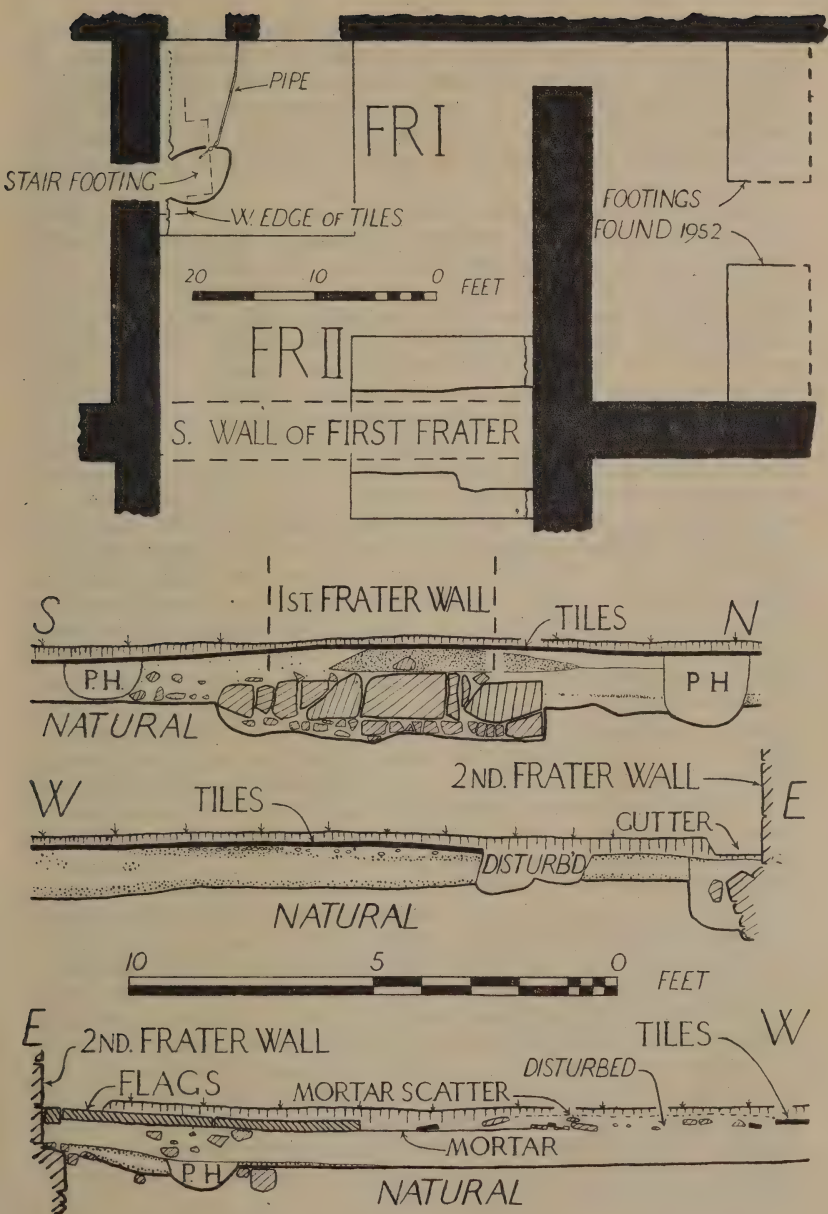


FIG. 16. FRATER PLAN AND SECTIONS—WEST, NORTH AND SOUTH FACES FR. II

It was therefore decided to seek for traces of the south wall of the assumed east-west frater; and also for further evidence of the fifteenth century reconstruction into a two storey building with a misericord below and the frater proper above, also described by Hope<sup>4</sup>. It can be said at once that excavation has completely vindicated his interpretation of the history of the frater.

Two squares were laid down, FR I in the north west corner of the frater, and FR II across a line between the south walls of the kitchen and the warming house (Plan, fig. 16).

In FR II, the earliest structure was found to be a massively built wall footing, on the very line where St. John Hope had postulated the south wall of the east-west frater. This footing was built of stones up to two feet in length and one foot deep, resting on smaller stones (section, fig. 16). On the west it was eighty inches wide, which, allowing for an offset of twelve inches on either side, gives an original wall fifty-six inches wide—precisely the width of the south wall of the kitchen. Towards the east, the footing widened sharply to one hundred inches, to accommodate a pilaster buttress. Comparison showed that this footing was similar in character to a line of cobbling discovered in 1952 in the Warming House<sup>5</sup>. This had been heavily mutilated on the east, and its purpose was not understood at the time of its discovery. It is now clear that it is in fact the footing of the eastern wall of the first frater, and it has accordingly been plotted on the Plan (fig. 16). The original west wall remains to be discovered in the kitchen.

The footings of the south wall of the first frater were cut down into the natural boulder clay to a depth of only nine inches, leaving their upper half exposed. Against and over them was laid a floor make-up of heavy clay, with bands of coarse sand. There was no trace of the actual floor of the first frater, though a hint of its position is given by the bottom of a thick layer of sand which was spread over the footings after the east-west wall had been dismantled. No finds are associated with the first frater.

When it was decided to re-orientate the frater, the east-west wall was taken down, but its footings remained. Sand and clay were spread over and beyond them as the make up of a new floor.

From this make-up came two coins dated between 1205 and 1223, one from each of the two excavated areas. It is difficult to access the significance of these coins in dating the re-orientation of the frater. Hitherto the only evidence for the date of the second frater has been provided by the fragmentary remains of the *pulpitum* arcade, which seems to have had round arches<sup>6</sup>, and by the western doorway from the cloister. Of this and its neighbour Hope wrote<sup>7</sup>:—

<sup>4</sup> *ibid* p.48.

<sup>5</sup> Kirkstall 1952, p.34.

<sup>6</sup> *Architectural Description*, fig. 43.

<sup>7</sup> *ibid* p.46.

"Both doorways are built up of twelfth century stones; both are insertions in an older wall. The frater is a work of the same date as the westernmost of the two doorways into it." He, then; dated the north-south frater to the twelfth century.

The coins, on the other hand, suggest a date towards the end of the first quarter of the thirteenth century. It is possible, of course, that they were introduced into the make-up of the frater floor during the fifteenth century rebuilding, described below, rather than during the re-orientation of the frater; but it is at least unlikely that two coins, close to one another in date, should have been lost in the same room two centuries after their minting. The twelfth century character of the masonry and details of the second frater may, in part, be accounted for by the re-use of material from the demolished original.

In FR II, the clay make-up containing the coin was overlaid in part by an area of flagstones six feet six inches wide, which ran beside the east wall of the frater for some twenty feet<sup>8</sup>. The flags were bounded on the north by an irregularly built wall or footing, Wall A, which included two re-used blocks originally chamfered for a drip-course. Wall A lay almost centrally along the footing of the south wall of the first frater, and was probably laid there when that footing was still exposed. The flags, then, probably mark the original floor of the second frater, though fragments of glazed tile found under them suggest that they were later taken up and re-set. In any case, it is difficult to explain the function of the small flagged area and the stump of Wall A which were left after the fifteenth century reconstruction.

Elsewhere in FR I and FR II the surviving floor of the frater was of inlaid glazed tiles (Pl. VIII) bedded on the same level as the flags (Section; S face of FR II, fig. 16). It is not possible here to describe this tiled floor fully; that must await the uncovering of further areas. The general layout comprised a border, some seven feet wide, of blue and yellow tiles three inches square, arranged in a chequer pattern, within which was set diagonally a grid of patterned tiles. Each square of the grid held sixty-four tiles four-and-a-half inches square, with inlaid patterns in white on a blue ground. The designs are simple floral or geometric patterns, built up, in some cases, of four continuous tiles. At the northern end of the frater, this layout was altered; but the floor was so fragmentary in FR I that it was not possible to work out the scheme.

This tiled floor is part of the fifteenth century alteration of the frater into a two-storeyed frater and misericord described by St. John Hope<sup>9</sup>. In FR I it overlay a one inch lead pipe which ran under the north wall of the frater, to join the main water supply of the Abbey, at a point where a gap had been made in

<sup>8</sup> Shown in outline in the Thoresby Society *Historical Ground Plan*.

<sup>9</sup> *Architectural Description*, pp. 48-9.

the footings (Plan, fig. 16). This gap is between the twelfth century and the fifteenth century doors into the frater, and it must have been made when the later door was inserted. The pipe had supplied two wash basins set against the west wall of the misericord at the foot of the frater stair. The portion of the pipe above ground had been torn out at the Dissolution—apparently while there was still water in it, for the end had been bent over to seal it—and two bronze taps, together with some sixteenth century pottery, were flung into the hole.

The tiles also partly covered an oval area of heavy cobbling, set against the west wall of the frater-misericord (Plan, fig. 16). This cobbling was one foot seven-and-a-half inches deep, and consisted of boulders up to one foot three inches by one foot by ten inches in size, interspersed with smaller rubble. On the east it cut into a deeper circle of cobbling of unknown purpose. The oval cobbling itself was covered with a very hard plaster, which had run out over the adjoining tiles. It clearly formed part of the footing for the staircase to the fifteenth century frater, on the first floor. The tiles stop about four feet out from the wall here, so the stairs were up to four feet wide. There are now no signs of the staircase against the west wall of the frater-misericord; but the later day stairs to the monks' dorter, which lay on the east of the warming house, have vanished in the same way.

Under the tile floor on the centre line of the frater lay a row of post holes, loosely filled with stones and soil (Section, W. face of FR II, fig. 16). These had held scaffolding during the fifteenth century alterations. At the same time, the lead required for roofing, glazing and plumbing, had been smelted at a number of hearths in FR I. These yielded a large quantity of lead, and the odd fragment of the fine hard purplish-grey ware, attributed to the fifteenth century by Mrs. Le Patourel. The tiles also covered fragments of a glass bowl, which may go back to the thirteenth century, since it was close to a short cross penny of Henry III, dated 1218-23; in any case, a *terminus ante quem* is provided by the tiled floor.

Finally, the make-up of the tiles contained fragments of wall plaster, including some with red stripes.

These excavations in the frater have amply justified St. John Hope's historical account. It is none the less remarkable that he should not have mentioned the well-preserved tile floor, which was certainly uncovered during the 1895 restoration work and which forms such an unusual feature of the Kirkstall frater.

## 5. SMALL FINDS

### I. STONE

#### (a) Flint

Occasional worked flints were found in the Cloister and were very common in the frater, in the otherwise sterile clay and sand make-up of the frater floors. Most of them are waste flakes, but

the clearly prehistoric character of several cores, blades, and a small thumb-nail scraper, together with the circumstances of their finding show that they have nothing to do with the monastic settlement at Kirkstall. It will be recalled that flint flakes and cores were found also in 1951 (*Report*, p. 20), and 1952 (*Report*, p. 39): their occurrence in the clay and sand make-up of the flag floor shows that they had no connection with the warming house). These flints will be published fully in a more appropriate setting.

### (b) Sandstone.

Four crudely worked discs, about two-and-a-quarter inches diameter and three-eighths to three-quarters of an inch thick were found in the superficial layers of the sub-dorter. They appear to have been counters.

## II. METAL

### (a) Bronze Taps (fig. 17).

Two small bronze taps were found in the frater. One, undamaged, is solid except at one end where a hole in the side connects with a small hole in the end. The handle is crook-shaped and ends with leaf and ball. The other is broken, the handle missing. It is completely hollow, and has a similar connecting hole in the side.

Mr. E. Ward of the Yorkshire Copper Works states:—

"This is quite a good type of bronze for taps, etc. In fact, a similar alloy is used nowadays for taps and sink traps, etc., for use mainly with sea water."

His analysis is as follows:—

Copper .....	86.5%
Tin .....	7.5%
Zinc .....	5.0%
Lead .....	0.5%
Iron .....	0.05%
Phosphorus .....	0.10%
Antimony .....	0.10%
Silicon .....	0.40%

### (b) Coins.

Short cross penny. *OBV.* Crowned head facing. Sceptre on left. *HENRICVS REX.* *REV.* Short cross, four pellets in each segment. *TOMAS ON EVR.* The coin is Group V or Group VI, probably Group VB. Thus King John or early Henry III.

Short cross penny. *OBV.* Crowned head facing. Sceptre on left. *HENRICVS REX.* *REV.* Short cross, four pellets in each segment. *RAVF ON LONDON.* The coin is Group VI, thus early King Henry III.

(c) **Iron slag.** By Dr. E. Simister.

We have carried out a chemical analysis on this . . . . the results are as follows:

Total Iron (% Oxygen not shown)	49.54%
Alumina .....	1.83%
Silica .....	20.80%
Organic & Carbonaceous Matter	7.80%

In preparing a sample for analysis we did our best to obtain a representative sample of the material which was, however, very heterogeneous, and, whilst the above figures are not likely to be extremely accurately representative of the whole, they do give a very fair indication of the type of material of which the mass is composed.

I have quoted a total iron figure, but it should be appreciated that there is no free or uncombined iron present in the sample, and all the iron content in it is in the oxidised condition, and we did, in fact, find the iron content to be divided roughly in equal proportions of ferrous and ferric oxides. The organic and carbonaceous matter represents what on visual examination appears to be mainly charcoal.

From the analysis figures obtained and from the appearance of the sample, I should be inclined to say that the lumps represent some scrapings from a furnace bottom, possibly during some cleaning-out operation as suggested by the presence of unconsumed fuel (charcoal) in the mass. The alumina and silica would come partly from earthy matter present in whatever iron ore was being used, and perhaps partly from the furnace structure itself.

The lumps rather resemble what in modern practice would be called "tap cinder," which is the accumulated oxide, slag and cinders, etc., which collect in a furnace during a period of working.

### III. GLASS

#### (a) Glass Bowl.

Fragments of a glass bowl were found in FR I in the make-up of the 15th century tiled floor (which may also be the make-up of earlier floors) close to a penny of the early 13th century. The glass can only be dated stratigraphically in the broadest terms to the 13th-15th centuries. It was examined by Dr. D. B. Harden, V.P.S.A., who very kindly provided the drawing, (fig.17), and who comments as follows—

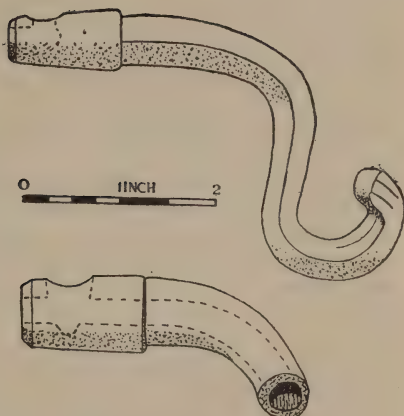
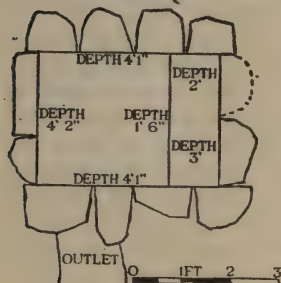
"Fragments of rim and side of bowl of glass, colour of metal doubtful, but probably dark green. The metal has almost completely devitrified and is extremely fragile. Surface heavily iridescent and flaky."

No parallels are forthcoming.

#### (b) Painted glass.

One example came from beneath the flags in the frater (FR II). The other three were unstratified but of similar type.

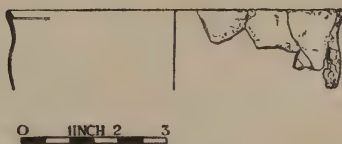
# THE CLOISTER CISTERN



## BRONZE TAPS



## PAINTED GLASS



## GLASS BOWL

FIG. 17. CISTERN IN CLOISTER, BRONZE TAPS,  
PAINTED GLASS AND GLASS BOWL

## 6. THE POTTERY (by H. E. Jean Le Patourel)

A number of fragments of pottery of twelfth century type were found in the cloister in association with the layer of charcoal that marked the site of early iron-working (see p. 52 above). If, as seems likely, these iron-workings belong to the period when the abbey was under construction, the sherds are somewhat earlier in date than the late twelfth century pottery found in previous years. With the exception of one pot, the fragments conform to the pattern of the twelfth century cooking-pots found in earlier excavations. The exception was a new type of big cooking-pot (fig. 18, No. 1), possibly the communal pot for the men who were engaged in the ironwork. It was in the usual hard, gritty fabric, and showed all the features of northern twelfth century cooking-pots; angular rim, strongly marked rilling and rounded base; but its characteristically thin walls were reinforced by vertical ribs of finger-pressed clay—a functional use of decoration known on large storage vessels in the north London region during the thirteenth century<sup>10</sup>. In the north of England, such decoration is not recorded as having been found on cooking-pots earlier than the fourteenth century<sup>11</sup>.

Part of a flat base, with an inch or so of the wall above the basal angle, was also found in the cloister, though not in the charcoal layer. Though it appears to be remarkably similar in fabric to the general run of late twelfth-century pottery, there are patches of green glaze on the exterior of the wall. A great number of these twelfth-century pots have been recognised from different parts of Yorkshire and beyond, but this is the first time that one has been found with traces of glaze, though very similar cooking pots are known, with glaze, from parts of Scotland<sup>12</sup>, dating from the thirteenth century. Fabric alone can be an uncertain guide, and it seems best to suspend judgment on this sherd for the time being. It was found with mixed sherds, including sixteenth century pottery.

Apart from this twelfth century pottery, little of interest was found of an earlier date than the sixteenth century.

The filling from the cistern in the cloister contained pieces from over thirty pots, including one almost complete two-handled pitcher (Plate VII). Though some difference was observed in the colour of the soil in the upper and the lower part of the cistern (fig. 15, Section B), the mixture of pottery showed no difference from top to bottom. The complete pitcher was almost certainly a casualty from the period when the cistern was actually in use, for it was found on the natural gravel at the bottom of the cistern. Its character suggests an early sixteenth century date as most probable. With its two handles and decorated

<sup>10</sup> *Antiquaries Journal*, vol. XIX (1929), pp.306-309.

<sup>11</sup> T. C. M. Brewster, *Two medieval habitation sites in the Vale of Pickering*, (Yorkshire Museum, 1952), p.45 (fig. XIV).

<sup>12</sup> *Proc. Soc. Antiq. Scotland*, vol. LVI (1921), pp. 30-31.

bung-hole, it is a typical northern pot, and will make a handsome addition to the collection of pottery from the abbey. The neck and shoulder of a three-handled pitcher, also found here, though of similar type to the pitcher found in 1950, is probably also of sixteenth century date. This class of vessel was common in the north in the fifteenth century, but is known to have survived into the succeeding century, and possibly beyond.

With the remaining fragments we are on less sure ground. Typologically it is not impossible for any of the sherds to date from the early sixteenth century, but we cannot be certain that the cistern was not filled in at a later date, and so include post-monastic pottery. It is precisely on the question of the duration of different types of pot that our information is so scarce. The sherds include parts of four grey stone-ware vessels; small fragments of four pots in a coarse, gritty, green-glazed fabric which might date from any period after the twelfth century; pieces of six jugs in hard, purplish ware, most likely to be of fifteenth or sixteenth century date, and sherds from six pots in Cistercian ware.

Each excavation at Kirkstall has produced a number of pieces of this dark brown, glazed, sixteenth-century pottery, known as "Cistercian ware." It seems clear that it was, in fact, a type of pottery in common use at that time, and not only in monastic communities; but not a great deal is known about its origin or distribution, nor whether it was made in one locality or manufactured in many different places. It differs from earlier and from most contemporary ware in both style and technique of manufacture. The body is light and free from grit, and is well and uniformly fired. The colour of the Kirkstall examples varies from brick-red to purplish brown, but whatever the colour, the pot, once made, was coated with a surface of brown slip. This slip was then either glazed, or further ornamented with cream slip before glazing. It is often assumed that a liquid glaze was necessary to produce the thick and full glaze characteristic of this pottery. A contemporary description of the processes used in the Staffordshire "combed ware" of the late seventeenth century, however, shows that lead was still applied in powdered form at that late date<sup>13</sup>. It seems likely that the glaze of the Cistercian ware was the result of more thorough pulverisation of the lead, and greater skill in its application, rather than the use of a liquid form of glaze. The cream slip used for decoration appears to have been applied—like the seventeenth century slipware—by piping, in the manner of modern cake decoration. Frequently further ornament was added, either by light rouletting over the cream slip, or by stamping spots of cream slip with a cross or other device. The treatment of the base, too, shows a marked advance on earlier methods of trim-

<sup>13</sup> L. Jewitt, *Ceramic Art of Great Britain*, vol. I (1878), p.97.

ming. One pot from the Abbey shows quite clearly that the pot had been inverted and "turned" on the wheel to trim off surplus clay and to form a "foot." It would be of interest to know more of the origin and distribution of this Tudor pottery.

## DESCRIPTION.

1. Rim and base of a large twelfth century cooking-pot in pink, gritty ware. The sides are reinforced with applied strips of finger pressed clay. Most of the angular-rimmed twelfth century cooking pots so far found have a height equal to the diameter of the base, or a little less. If this specimen runs true to type it should stand some thirteen inches high.

2. Late twelfth century cooking-pot in pinkish-cream gritty fabric.

3. Part of a small cooking-pot from the sub-dorter. Probably thirteenth century.

4. Rim and neck of a jug in rather similar fabric to the above, with a splash of greenish glaze. It is decorated with continuous rouletting. Thirteenth or fourteenth century.

5. Two-handled pitcher from the cloister cistern. Gritty ware; body grey with red surfaces. The pitcher is covered on about two-thirds of its external surface with brown glaze. Both bung-holes and pots with more than one handle are common in the north of England after the fourteenth century.

6. Upper part of a three-handled pitcher from the cistern. Gritty red ware, brownish green glaze. The handles spring from points about half an inch below the rim, and are equi-distant from one another. Compare this with the more complete example found in 1950, and illustrated in the report for that year. This type of vessel probably continued in use as late as the seventeenth century.

7. Small dish found in the frater. In the centre is a small figure of a bird. Fairly smooth cream ware with a bright green glaze covering the whole of the interior and part of the exterior surface. This curiously shaped vessel has a parallel in York, where the figure in the middle is that of a dog.

8. "Cistercian ware" base. This pot shows definite marks of having been "turned" on the wheel, as opposed to the earlier method of trimming the base by hand.

9. Similar ware. The treatment of the base is not so successful in this pot. Again, there is evidence of wheel "turning," but the pot is distorted. Note the thickness of the glaze in the bottom of the pot.

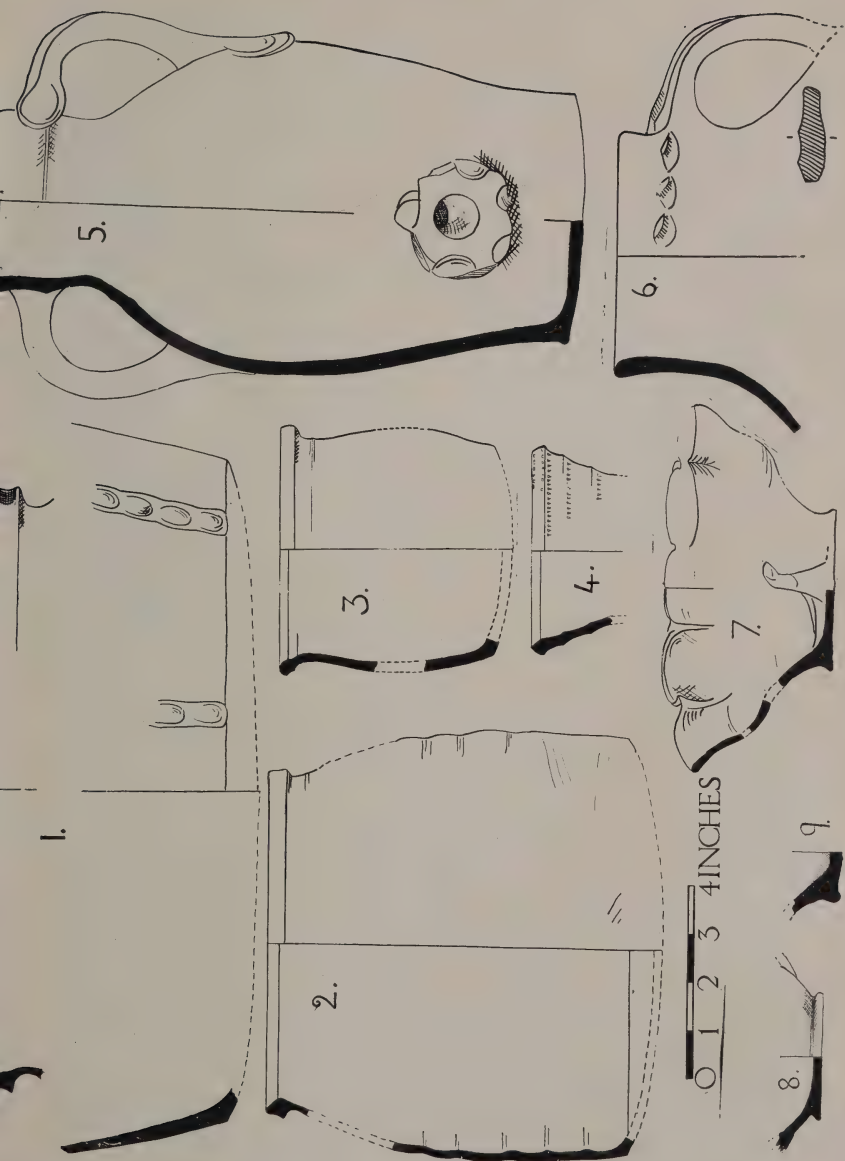
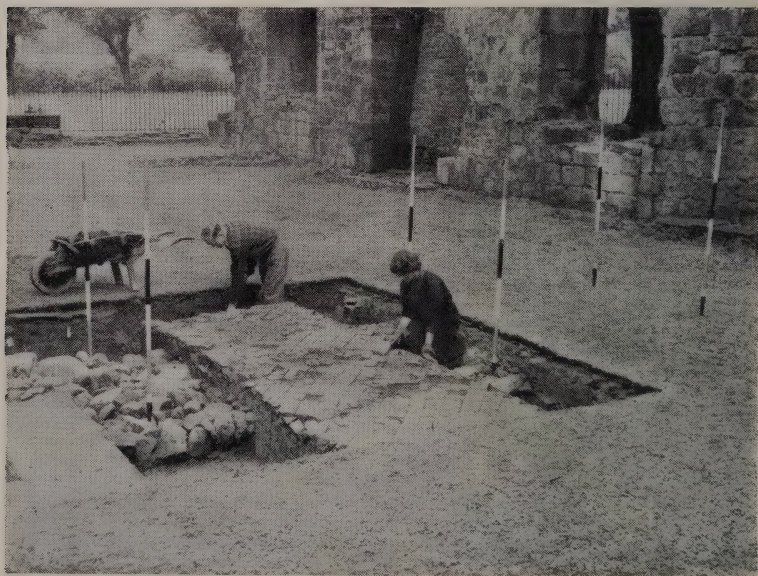


FIG. 18. POTTERY FROM CLOISTER, FRATER AND SUB-DORTER  
SCALE  $\frac{1}{4}$ .



(a) THE CLOISTER CISTERN



(b) THE FRATER FLOOR AND WALL FOUNDATION

*Copyright: Leeds City Museums*

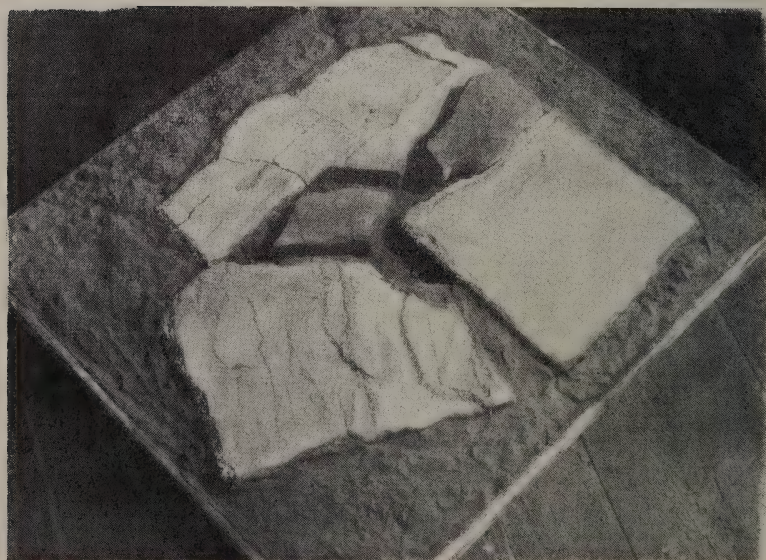


THE FIFTEENTH CENTURY CRUCIBLE

*Photo: Yorkshire Copper Works.*



(a) THE KITCHEN HEARTHS



(b) THE CRUCIBLE HEARTH

# Kirkstall Abbey Excavations

5th REPORT, 1954

by DAVID OWEN, Ph.D., F.M.A.

## 1. INTRODUCTION

THE 1954 dig set out to solve several problems which had been raised in previous years. It was directed by Dr. David Owen with the assistance of Messrs. C. M. Mitchell, C. V. Bellamy and M. Greaves. Mrs. Jean Le Patourel took charge of the pottery. The work was carried out in three separate areas. In 1953 (see Fourth Report<sup>1</sup>) a layer of charcoal had been exposed containing a quantity of iron slag, and this appeared to be the sweepings of a small bloomery. Since it thinned out to the east and to the north, a trench was planned to the south east in the hopes of finding the bloomery itself. In 1953 also a cistern had been found with an overflow soakaway running south. The inlet occurred on the eastern side and it appeared to run eastwards. It was therefore decided to excavate a small room lying east of the sub-dorter and immediately south of the eastern end of the chapter house, for this room was in line with the extension of the inlet.

In 1950 (First Report) a shallow trench had been laid across the kitchen floor from north to south. There was no time to proceed and it was filled in. A stone structure hollowed centrally had been observed. It was therefore decided to excavate the whole of the western side of the kitchen and to complete the work started prematurely.

## 2. THE CLOISTER

A trench was sited to run east and west on the west side of C.L.1 (see Fourth Report) and extensions were advanced both to the north and the south. The charcoal layer with enclosed nodules of iron slag and fragments of twelfth-century pottery was reached and was traced throughout. It was found to be thickest in the east and to be thinning westwards and also northwards in the north extension and southwards in the south extension. It was thus clear that the actual bloomery lay to the east of the present season's site, that is somewhere in the site excavated in the 1953 dig. A close look at the 1953 sections, particularly section B-B (Fourth Report, p.53) shows a disturbed area adjacent to but not adjoining the cistern. This must have contained the bloomery or furnace, which was presumably removed when the cloister was laid out.

Thus the 1954 cloister trench produced negative evidence sufficient to suggest the site of the bloomery which could have been nowhere else but centrally in the charcoal layer.

<sup>1</sup> *Kirkstall Abbey Excavation. Fourth Report, 1953.* (Thoresby Society Publications.)

### 3. THE EAST ROOM

This room lies south of the chapter house extension and east of the parlour and protrudes into the passage which runs obliquely from the south east of the cloister to the infirmary (fig. 19). St. John Hope<sup>2</sup> describes it as a fourteenth century addition and considers that it was entered from the parlour. Benches occur on all four sides, though St. John Hope gives no indication as to whether these were original or were added later. He suggests that the room may possibly have been a school for novices.

Beneath the turf were a number of post holes and disturbances which date to the repairs early in this century. Along the eastern side in a few places, and in patches in other parts of the room, were traces of a thin mortar floor which was laid against the benches and into the parlour doorway. Beneath this was a thin and impersistent layer of brown clay, and beneath this again a floor of rounded pebbles, trodden firmly into brown clay. The brown clay was thick and pebbles persisted throughout though most were on the surface. This pebbly floor passed beneath the benches. Immediately below the south western bench was a fragment of "Cistercian" pottery. Thus it would seem that the benches and mortar floor were added in the sixteenth, or very late fifteenth century, and that the pebbles formed the original floor of the room, considered by St. John Hope to be fourteenth century.

Beneath the pebbles and running southwards for two thirds of the way along the western wall, was a row of large boulders. These appeared to be the footings of the east wall of the eastern range though they stood further out from the wall than usual. Beneath these, in the north west corner of the room, the large stone drain was located. It passed right beneath the doorway into the parlour and was of similar construction to the cistern overflow and to the small section of inflow of which it is a direct continuation. It was however, more massively built, as was to be expected beneath the heavy walls of the parlour and dorter. It consisted of large thick slabs set upon their edges in a trench with heavy massive flags and boulders resting upon them (fig. 20). There were numerous gaps between. The level of the bottom of the drain was nine inches higher than the cistern inflow sixty feet further west.

Six feet east of the parlour wall the stonework of the drain stopped though the drain trench itself continued and was clearly visible in section, both in a central baulk and on the eastern side of the room.

<sup>2</sup> *Architectural Description of Kirkstall Abbey*, by W. H. St. John Hope and John Bilson, 1907 (publications of the Thoresby Society, vol. XVI).

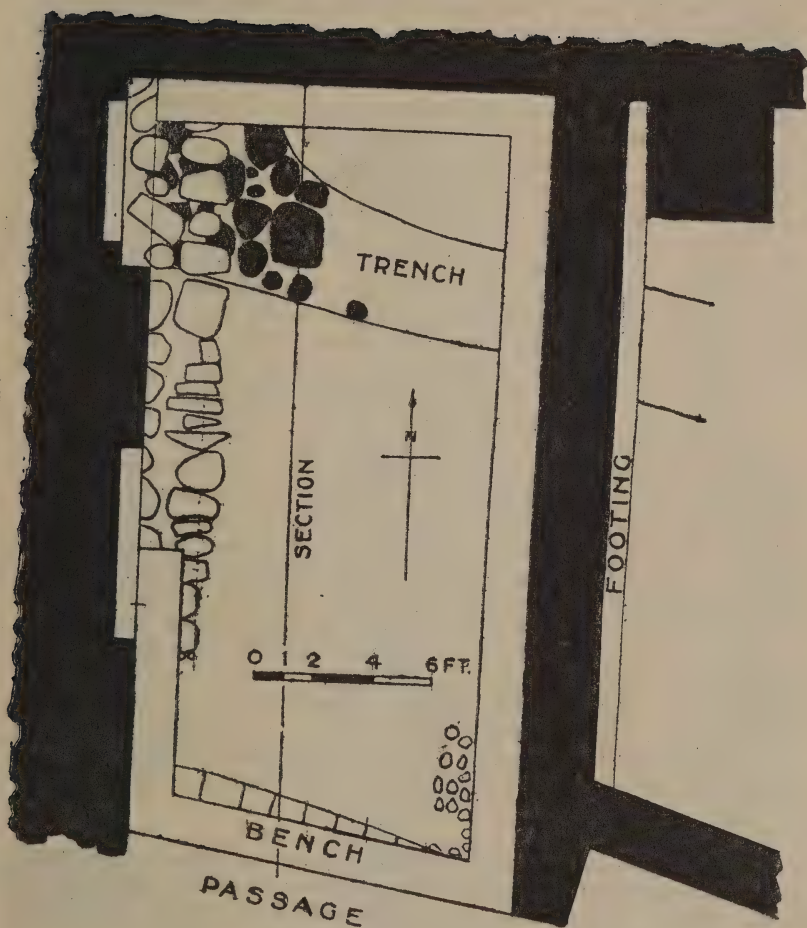


FIG. 19. PLAN OF THE EAST ROOM.

A further trench was taken out on the east side of the east wall and the drain trench was once more visible in section, six inches higher in level than on the west of the room. Thus, the drain trench was traced for eighteen feet and in the westernmost six feet only was the stone structure found. It is odd that such a trench should have been dug if it was not to house a drain throughout. It seems more likely that the stonework was later removed. Perhaps some alternative method of filling the cistern was put in at a later date.

On the south side of the room the footings of the passage wall were found. Near to them was a base of a twelfth century pot. In the south eastern corner they showed that the original north wall of the passage had turned south two or three feet further west before the room was constructed. The room is not now rectangular but it would have been even more wedge-shaped if it had run in to the old corner of the passage wall.

Thus the sequence of events in the room appear to have been as follows. First the drain was constructed in the twelfth century to bring a supply of water to the cistern in the cloister. Then the east range of the Abbey buildings was erected. Perhaps a century later or even less the passage to the infirmary was built. Before the nook already enclosed on three sides by chapter house extensions, parlour and passage was converted into a room, the stonework appears to have been removed from the drain trench except beneath and adjacent to the parlour door.

St. John Hope believes the room to have been built in the fourteenth century. On the south east its own wall replaces a stretch of passage wall. It was floored with clay into which were trodden smooth pebbles. Very late on, perhaps at the end of the fifteenth or even in the early sixteenth century, benches were put round and a mortar floor was laid.

#### **1. THE KITCHEN**

The western half of the kitchen was excavated. The work was considerably complicated by numerous modern disturbances which had to be cleared out. First there was a series of modern post holes which had supported scaffolding. Then there was at least one trench put down in St. John Hope's day to test the continuity of foundations. There were also the places from which large trees had been removed, roots and all. Finally there was a deep modern drain which crossed the kitchen from side to side, cleanly cutting through all the structures. Over much of the surface, the ground was disturbed to a depth of several inches the top layer consisting of builders rubble. In his plan of the kitchen, St. John Hope shows a dotted line which represents two fireplaces placed back to back in the middle of the kitchen floor facing north and south. He states "All remains of them have disappeared but during the excavations which preceded the recent repairs some fragments of the hearths were found with strong

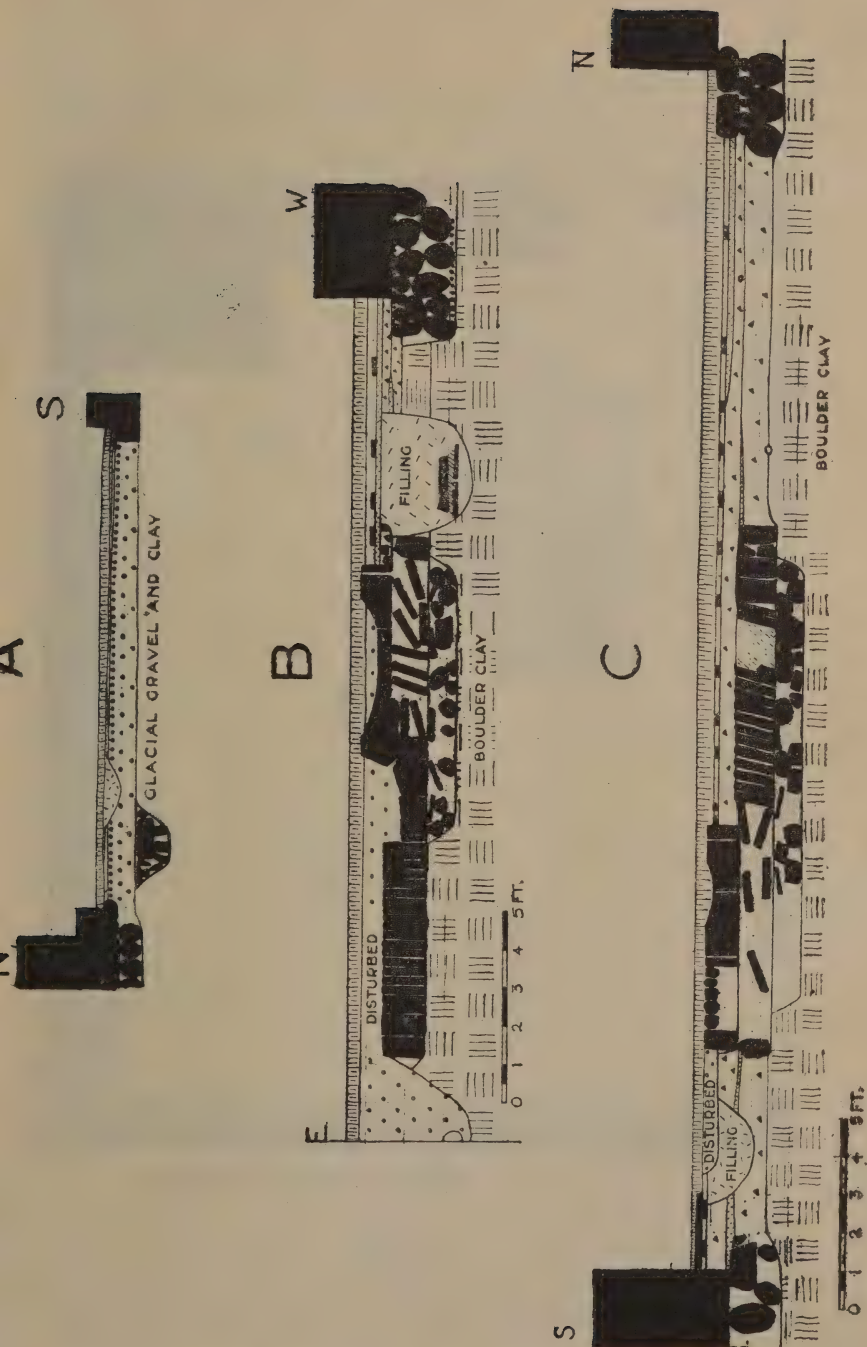


FIG. 20. SECTION A, EAST ROOM, SECTIONS B AND C, KITCHEN. (71)

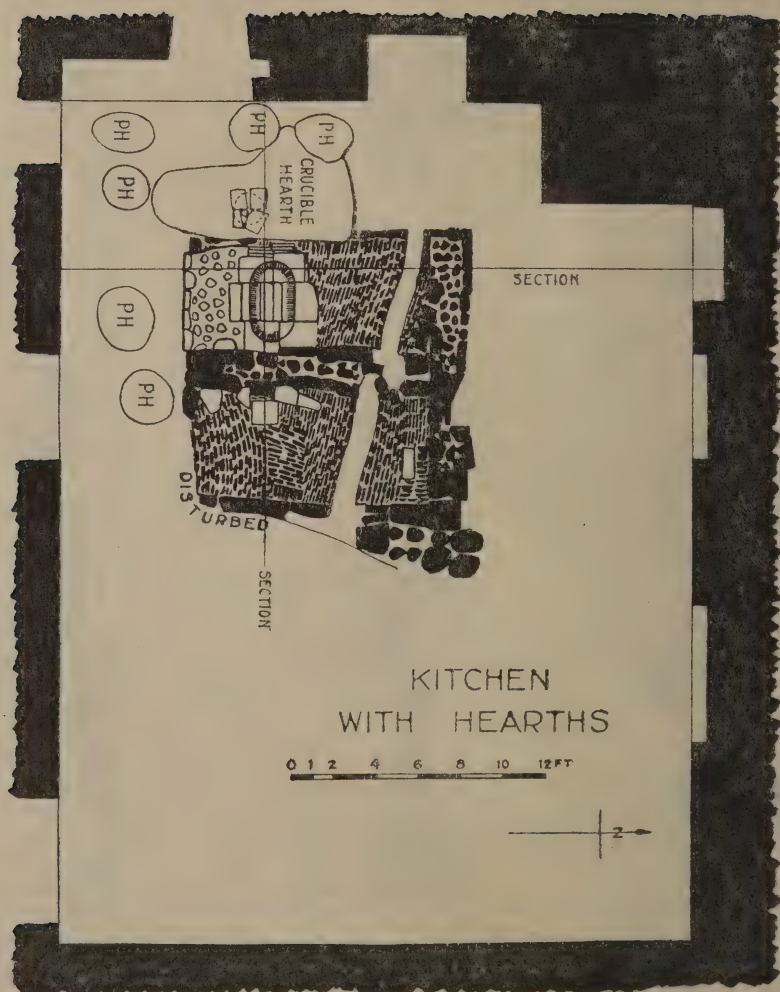


FIG. 21. PLAN OF KITCHEN SHOWING HEARTHS.

traces of fire; unfortunately they were destroyed by the workmen before they could be planned." The siting on his plan is by analogy with the fireplaces in the kitchen of Fountains Abbey.

Fortunately the hearths and fireplaces had not been destroyed and the excavations showed them to be nearly complete and orientated quite differently, facing to the east and west. There were three in all, at different levels below the surface (fig. 20).

The lowermost hearth was set deeply into the boulder clay and consisted of large stones with a number of limestone flags amongst them. Its position was slightly south of central of the first kitchen. From its depth it would seem that the actual hearth rested on top of the stones uncovered in the excavation and that these formed a foundation. Perhaps the hearth itself was made of the flags set upon their edges.

St. John Hope describes the reorientation of the refectory before the end of the twelfth century and shows how the kitchen was extended to the east. Apparently at this time there were many more monks and the feeding and cooking arrangements needed to be increased. With the greater space thus provided in the kitchen, two hearths were built back to back, the western in place of the original hearth and on its foundations though overlapping slightly and the eastern adjoining and facing east (fig. 21). This eastern hearth could not have been used in the earliest, restricted kitchen, as its curb touched the wall foundations but the enlarged kitchen gave it sufficient room. With the building of the two hearths the whole kitchen was floored with mortar and traces of this floor remain. It reached the four walls, covering thinly the footings.

It seems likely that these cooking arrangements satisfied the community for the next two or three centuries. The hearth is seen to have been repaired in places, but it is still in good order. It consists of sandy flagstones set in clay and on their edges, and bounded on the east and the west by a curb. On the north and the south were broader curbs which doubtless formed the foundation for the chimney which went up centrally through the roof. Running north and south, centrally, and dividing the two hearths, was another wall foundation. Thus the whole heavy chimney structure was firmly supported. The hearths themselves were reddened with heat to the depth of a few inches. On the eastern hearth was found a long cross penny of Edward I.

In the fifteenth century a large hole, pear-shaped in plan, was dug through the floor and the hearth curb on the west side of the hearths. In the bottom was a small hearth of flagstones covered with charcoal. Centrally on it were the remains of a crucible which contained charcoal and bronze fragments. This is described in detail by Mr. C. M. Mitchell. The hole itself was filled with rubble, charcoal, bronze fragments and shreds of

broken crucible and contained some other pieces of pottery of fifteenth-century type.

It appeared that the kitchen was used as a workshop at this time, possibly for some extensive repairs, but the siting of the hole suggests that the western hearth was not then in use. Running through both western and eastern hearths was a channel where the actual hearth stones had been removed. There is no evidence to show when these stones were taken out except that the channel was covered by the later monastic floor to be described. Perhaps the kitchen was no longer in use and the meals were being cooked in the new meat kitchen.

The next structural stage shows the re-use of the kitchen for cooking. Upon the southern half of the western hearth was built an entire stone hearth of great stones with a centrally cut, oval hollow depression. This was curbed on south and west and was built against the central wall on the east. At the Dissolution, the number of monks was stated to be thirty, and it seems likely that this small hearth was adequate for their cooking arrangements. The whole room was also covered with a new floor of flagstones laid upon small flags and set in sand. This floor ran in to the western kitchen doorway which was thought by St. John Hope to have been inserted in the fifteenth century. The floor also covered the western hearth and some of the northern curb, but not the central wall.

Unfortunately, the later disturbances had removed all subsequent deposits from the eastern hearth. The floor also sealed the hole with the crucible hearth beneath. No doubt the younger kitchen drain found in the first excavation in 1950 belonged to this phase in the alterations. It was rising to this level but was cut off by a modern drain put in at the close of the nineteenth century. This medieval drain and the middle floor of the kitchen courtyard, were also determined by included pottery to be of fifteenth century date.

It was unfortunately not possible to test the relationship of the fifteenth century floor to the drying kiln in the north west corner of the kitchen, said by St. John Hope to have been inserted at this period. The ground adjacent to it had been disturbed presumably by workmen digging to examine its foundations. In the disturbed ground were many fragments of a large three handled pitcher very similar to that found in the first season.

Against the north eastern corner of the eastern hearth are great boulders and cobbles. These are cut out further south by the modern trench into which a drainpipe has been laid. They underlie the line which is marked on St. John Hope's map to represent the eastern wall of the first kitchen, and appear, therefore, to be the footings of this wall. They complete the story of events in the kitchen, beginning with the first small kitchen and its single hearth, continuing with its increase in size

and two large hearths facing east and west and concluding with its small hearth and flag floor. The whole series of alterations mirrors well the changes in the community. First there was the modest few who formed the nucleus of the new community. Then the great numbers which were attracted by the simple life of hard work offered by the early Cistercians. Last there was the small group of monks numbering at the Dissolution only thirty. The historical story and the archaeological evidence ran parallel.

## 5. SMALL FINDS

- (a) A Long Cross Penny of Edward I, Class X, (1302-07) was found on the south eastern section of the kitchen hearth. OBV. Crowned head facing EDWA R ANGL DNS HYB. REV. Long Cross, three pellets in each segment. CIVITAS LONDON.
- (b) Two small kiln props, nearly cubical pieces of sandstone, glazed on all sides, were recovered from unstratified layers in the north west of the kitchen.
- (c) A small pot, described below, contained a bright red residue which was submitted to the Department of Colour Chemistry, Leeds University.

We are indebted to Dr. E. J. Cross, F.R.I.C., for the following report:—

The material consists of brownish red lumps and when rubbed out on paper is very gritty and gives a brownish red mark. It is insoluble in water and on ignition affords no indication of the presence of organic matter; it is thus not derived from a natural organic colouring matter. Approximately 85% of the portion examined was soluble in boiling hydrochloric acid forming a deep yellow solution which gave an intense blue with potassium ferrocyanide solution, indicating the presence of iron. The residue, from the microscopical observation, appeared to be mainly silica. Of the portion soluble, 82% was precipitated as ferric oxide (together with, possibly, some alumina) by means of ammonia.

The pigment, therefore, consists essentially of oxide of iron and is contaminated with sand and earthy matter.

(N.B. The red oxide of iron, Haematite, has been used as a mineral colour agent for thousands of years. In Egyptian times it was finely powdered and used as "rouge". David Owen).

## THE HEARTH AND CRUCIBLE (by C. M. Mitchell, A.M.A., F.S.A.).

It has been said that the discovery of copper metallurgy was one of the most important events in man's history. We have only to consider the difference between the Stone and Bronze Ages to appreciate this fact. Furthermore, man applied the experiences gained in the working of copper and its alloys to other metals, and with these he has changed the face of the earth and his whole way of life by applying them to industry and art.

Copper occurs in either a free or "native" state or chemically combined with other elements in the form of ores. Native copper is found in many places throughout the world and it was this type of the element which was no doubt first used. In the beginning it was hammered and beaten cold into the required form. Copper that is so beaten becomes hard, but it also has the disadvantage of becoming brittle. It was found that by heating the metal it became more plastic, easier to work and the brittleness disappeared. The application of heat led to the discovery that the metal could be made molten and by pouring it into a mould of any desired shape, the tedious hand fashioning could be done away with. In short, the principle of casting had been discovered.

The fact that it could be cast into an infinite variety of forms and that, when alloyed with tin, it gave a very hard bronze, made copper the most important metal for about 3,000 years. Even when it was superseded by iron for tools and weapons, it was still used for an infinite variety of purposes. The reasons for this were (1) The difficulty of liquifying iron, i.e. cast iron although known before the early 17th century, could not be produced on a commercial scale prior to this date. (2) Copper and bronze do not oxidise continuously. Generally speaking, once a film of oxide or "patination" has formed on the outside of the metal, the underneath is protected. ((3) It was easily worked owing to its comparatively low melting point, its softness and malleability.

Following the use of native metal came the discovery that copper ores could be reduced by smelting. It was from these that the main supply of copper was obtained. There are two main groups of ores. (1) The oxides, carbonates and silicates which were easily smelted by a charcoal hearth fire, furnished with bellows. (2) The sulphides which were more difficult to work.

The general practices of smelting sulphide ores was as follows:—

The ore was first roasted in a fire to drive off excess arsenic and sulphur compounds. The roasted ore was then smelted in a shaft furnace with charcoal and certain fluxes. The resultant impure metal was then resmelted in a blast furnace with charcoal and fluxes. This gave what is termed black copper, which was refined to the pure metal in a crucible. The general method of doing this in the 10th century was as follows:—

A clay crucible was filled with black copper and charcoal. This crucible was set on a hearth of burning charcoal, and a bellows blast applied. After heating long enough the copper became molten and ashes were thrown on top of it. The mixture was then stirred with a piece of wood which caused the slag to adhere to the ashes which were then skimmed off. The pure molten metal was then run off into moulds. The main point

that should be noted is the use of charcoal in the crucible. The reason for this was to reduce the copper oxide in the black copper and formed during heating.

If bronze was required, copper and tin ores were smelted together. Tin, smelted by itself, loses as much as 25% due to rapid oxidation. Smelting the ores together however, reduces this about  $2\frac{1}{2}\%$  to 4%.

The general practices, mentioned above, were used up to the beginning of the 18th century. Whatever the differences are to be found, either in a particular locality or area, are of degree not of kind. In England therefore, between A.D 1000 and 1500 the usual method of working copper and bronze may be summed up as follows:—

Copper ores were mined in Cornwall, Cumberland, North Wales, Anglesey, and North Yorkshire. Tin ores in Cornwall. There is evidence that these ores were smelted where they were found but they were also dispatched to smelters as and when required.

In the case of oxide ores, a simple hearth was built with a cup shaped depression in its bed. Alternate layers of ore and charcoal were piled on the hearth, the charcoal ignited, a bellows blast applied, and the resulting reduced copper ran into the depression. If bronze was required then the ores of copper and tin were mixed together. This type of hearth could also be used for smelting other metals including iron. The method of smelting sulphide ores was as previously described.

Bronze was used for an infinite variety of purposes, such as taps, door furnishings, book clasps, personal ornaments, etc. There is much evidence that it was extensively used by the monks. In the light of the above facts, let us therefore look at the evidence of copper and bronze working at Kirkstall Abbey.

In a pipe trench in the warming house in 1952 (Third Report), a great quantity of charcoal together with slags of iron, copper and lead were found. The copper slag had tin mixed with it in a larger proportion than could be construed as accidental—hence, bronze must have been produced. This means that the ores were probably reduced in a shaft furnace. The iron slags contained a small percentage of copper and this could only mean that both types of ore were smelted in the same furnace. Although no such furnace was found with traces of copper or bronze, in the 1953 dig, what appears to be an iron smelting furnace was found in the cloister. This could also have been used for copper smelting, but positive proof is lacking. The fact remains however, that copper and tin ores were reduced somewhere in the Abbey.

We come now to the find in the kitchen this year and the first item to be considered is a flat hearth bed made of stones (fig. 22). On the west side of this hearth there was an opening covered over with a flat stone. This opening led to a channel

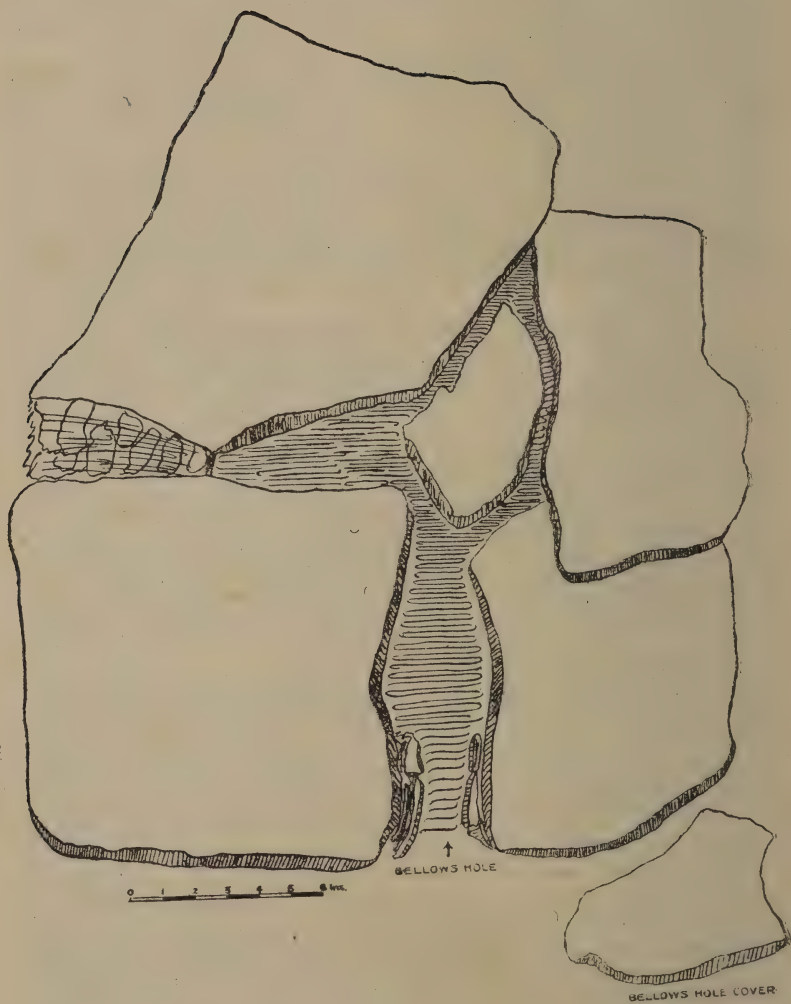


FIG. 22. THE CRUCIBLE HEARTH.

which went round the inside of the hearth. This was no doubt a bellows hole and draught channel. The nozzle of a pair of bellows would fit into the hole and would be protected from the fire by the flat stone on top. The air from the bellows would circulate through the channel, reaching all parts of the fire built on the hearth. On the north side of the hearth was another similar opening but this had been filled in. It was probably used for another pair of bellows and the fact that it had been filled in may indicate that it was found that only one pair was needed to give a sufficient blast of air. The hearth stones showed considerable signs of fire discolouration. There were splashes of copper on three of them and large quantities of charcoal lay scattered around.

Resting on top of the hearth was an earthenware crucible lined with charcoal (fig. 23). The sides of this were caved in and fragments of it lay around the site. The inside of the crucible was filled with earth, charcoal and pieces of metallic substances similar in appearance and weight to copper. Further examination showed that the crucible was upside down whilst the fragments yielded portions of its base and lid. The latter was not lined with charcoal. We were able to ascertain the following information.

The outside measurements of the crucible were:—height  $17\frac{1}{4}$ ", diameter of the top  $17\frac{3}{4}$ ", diameter of the base  $11\frac{1}{8}$ ".

The inside measurements were height  $13\frac{3}{4}$ ", top diameter  $14\frac{1}{4}$ ", base diameter 10".

The walls,  $1\frac{1}{2}$ " thick, were made up of 1" of charcoal on the inside and  $\frac{1}{2}$ " of pot on the outside. The lid was of  $\frac{3}{8}$ " thick pot. Three inches from the top and set at nine inch intervals round the circumference were iron lugs built right through the walls. The total capacity of the crucible would be about 1,600 cubic inches.

There could be no doubt that this crucible was made for copper or bronze refining. It would be supported over the hearth by means of chains fastened to the iron lugs. Traces of the support have not been found but there was a diagonal post hole on the south side which may have held a pole for this purpose.

We come now to the analysis of the metallic substances found in the crucible. Great care was exercised in having these fragments analysed. They were so small that a complete analysis could not be expected. A fragment was submitted to Dr. R. Haynes former lecturer in metallurgy, Leeds University, and another to the Yorkshire Copper Works. As the analyses pointed to two different types of bronze, a further, even smaller fragment was submitted to Messrs. Guthrie, Adams and Co., who were asked to look for antimony and lead. Their analysis deals with these two metals only and the percentage is of the whole fragment including non-metallic fractions.

The results of their investigations were as follows:—

Dr. Haynes

Copper .....	79.10
Tin .....	6.72
Lead .....	0.82
Most of the remainder antimony.	

Yorkshire Copper Works

Copper .....	73.60
Tin .....	9.90
Lead .....	13.70
Nickel .....	0.2
Iron .....	0.03
Residue .....	3.55

Messrs. Guthrie, Adams and Co.

Lead .....	15.5
Antimony .....	1.5

The examination of the above will show that there are three different types of alloys. It would be impossible to make these alloys in the crucible at one and the same time, and yet there is every indication that the crucible had been used on the hearth site. It is reasonable to suppose therefore, that although the crucible had been made originally for copper smelting, the use to which it had been put when it was excavated was that of melting. No doubt worn or disused objects made of copper alloys were collected together and then melted up for further use.

The find itself is an important one as it gives clear proof of the type of crucible used during the medieval period. Hitherto information with regard to these objects was obtainable only from written record but this crucible substantiates what has been for the most part conjecture.

**THE POTTERY** (by H. E. Jean Le Patourel, B.A.)

A number of small pieces of pottery were found in the charcoal layer surrounding the bloomery in the cloister (see p. 67). These consisted of fragments of cooking-pot of the kind found at this level during last season's excavations, and dated in 1951 to the later twelfth century<sup>3</sup>. The sherds included also a small fragment from a jug in this highly characteristic early fabric. Though only large enough to give the shape and dimensions of the jug's neck, with a suspicion of thickening towards a handle just below the rim, the jug has the angular clubbed rim and strong rilling usual on northern pottery of this date. The fragment represents the oldest jug so far found at Kirkstall. Indeed, the overwhelming proportion of sherds in this ware from all sites on which it has so far been found consist of pieces of cooking-pot. Portions of two such cooking-pots were found in the kitchen this year (fig. 24, nos. 1 and 3). Both were unstratified. Part of the base and some of the body of another

<sup>3</sup> *Kirkstall*, 1951, pp. 21, 24.

were found in the east room beneath the pebble floor in the south eastern corner (see p. 70). These well-made, angular-rimmed pots appear to have been the common cooking utensil in the early monastic community. Their use persisted into the following century, during the course of which they must have been superseded by a thicker round-rimmed type<sup>4</sup>. These in turn probably gave way to the more conventional metal pot since no cooking-pot recognisably fourteenth or fifteenth century in type has so far been found on the site, though late cooking-pots with angular metallic-looking handles are known from Knaresborough and from Kirby Malzeard<sup>5</sup>.

Another type of cooking vessel not found before in the locality, and of uncertain date, is the small skillet (fig. 24, no. 4) with a socket to take a wooden handle. Its internal surface is covered with light brown glaze, now somewhat decomposed. A somewhat similar type of socketed skillet was used in the Midlands and in London in the twelfth century<sup>6</sup>. The fabric of this pot closely resembles that of the small jugs found in 1952 and tentatively assigned to the thirteenth century<sup>7</sup>. In view of the general absence of glaze on northern cooking pottery in the twelfth century, this skillet is likely to be of later date than the midland series.

The greater part of a three-handled pitcher was found in the north-west corner of the kitchen (see p. 74). Though only two of these large vessels have been found in anything like a complete state, the remains of at least a dozen can be recognised among the sherds from the various years. This suggests that they were used quite extensively. They were certainly manufactured over a long period of time. The original Kirkstall pitcher found in 1950 was related to the middle floor of three in the kitchen courtyard and unlikely therefore to be of later date than the late fifteenth century, a date supported by the somewhat similar pitchers found on the fifteenth century site at Cambokeels<sup>8</sup>. The neck and handles found in 1953 were probably not earlier than the sixteenth century while a vessel from the North Riding takes the type down to the end of the seventeenth century<sup>9</sup>. One interesting point is raised by the pitcher found this year. Both it and the 1950 pitcher have a pad of clay marked with four grooves applied to the body of the pot. On the 1950 pitcher this was set centrally between two of the handles and above and in line with the bunghole. Thus it could easily have been a

<sup>4</sup> *Ibid*, fig. 8, No. 18 and *Kirkstall* 1952, fig. 12, No. 5.

<sup>5</sup> The Knaresborough pot is in the Yorkshire Museum, York; that from Kirby Malzeard is in the Abbey House Museum, Leeds.

<sup>6</sup> *Antiq. Journal*, XVI (1936) p.409; G. C. Dunning on the medieval pottery in K.M. Kenyon, *Excavations at the Jewry Wall Site, Leicester* (1948), p.229.

<sup>7</sup> *Kirkstall* 1951, fig. 9, No. 21 and 23.

<sup>8</sup> *Archaeologia Aeliana*, 4th Series XXVII (1949) pp.200-204.

<sup>9</sup> O. Grabham, "Yorkshire Potteries, Pots and Potters". Yorkshire Philosophical Society, *Annual Report* (1916) p.106.

decorative feature. On this year's pitcher however, the pad is placed to one side, almost immediately beside a handle, and this apparently random placing suggests a utilitarian rather than a decorative function. Possibly it was an indication of capacity.

Lastly, an interesting find in the kitchen was the lower half of a small pot containing red pigment (see p. 75). This pot is unusual not only for its contents but for the technique of its manufacture. The base was made separately from the walls and luted on before the pot was fired. This method was used for attaching sagging bases in East Anglia in the early middle ages, and was one answer to the problem of making such bases. With so small a pot as this Kirkstall vessel, and a flat base, it is difficult to suggest a reason for the departure from the more usual and much easier method of construction.

### Description

1. Part of a late twelfth-century cooking-pot. The fabric is hard and gritty, the colour pinkish buff, deepening to a warm orange on some parts of the exterior.

2. Fragment of an unglazed jug in similar ware, probably also of late twelfth century date. The angular rim-form and strong rilling are characteristic of cooking-pots of this period. Jugs in this fabric are comparatively rare, but examples were found both at Almondbury and Rievaulx.

3. Rim of a small cooking-pot in similar ware. Light buff.

4. Part of a small skillet with a socket springing from below the rim, to take a wooden handle. The ware is gritty, fairly soft, with a grey core and red surfaces. The rim is turned out. The interior surface shows decided rilling and is largely covered with clear glaze, which, on the red walls gives a pleasant light brown colour. The size is approximate as there was some distortion in the remaining segment of the rim.

5. Bowl in medium-hard, grey sandy ware. The interior is covered with clear glaze, now largely decomposed. The bowl is crudely made. An even more distorted bowl in similar ware but unglazed was found in the kitchen. In both cases the standard of craftsmanship was low.

6. Late fifteenth-century three-handled pitcher. Hard gritty grey ware, partially covered with brown glaze on the exterior, with a certain amount spilled over into the interior. The rim is decorated by thumbing and there is fairly marked rilling on the neck and body. The three handles are grooved, and there are foliations where they join the body. The pitcher compares closely with that found in 1950 and the missing base may fairly be reconstructed on the lines of the earlier example.

7. Lower part of a small pot or jug, containing red pigment. The ware, though rather coarser in texture, otherwise resembles modern "flower-pot". The base of this pot has been thrown separately from its walls, and the two have been luted together before firing.

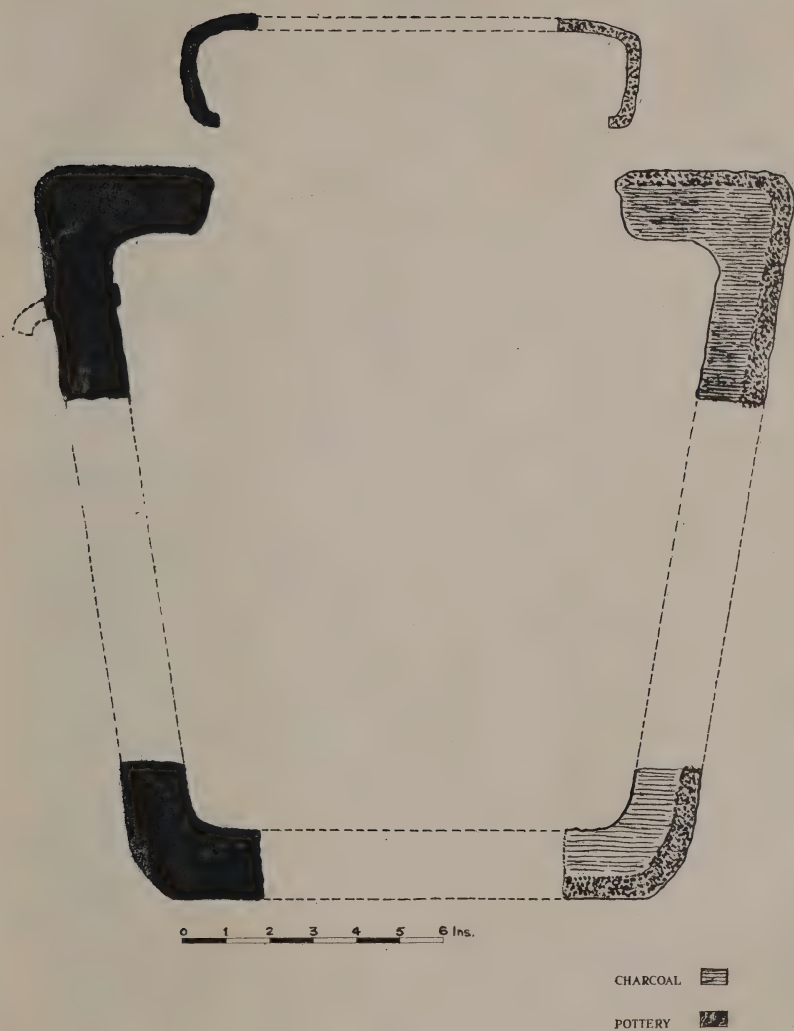


FIG. 23. THE CRUCIBLE.

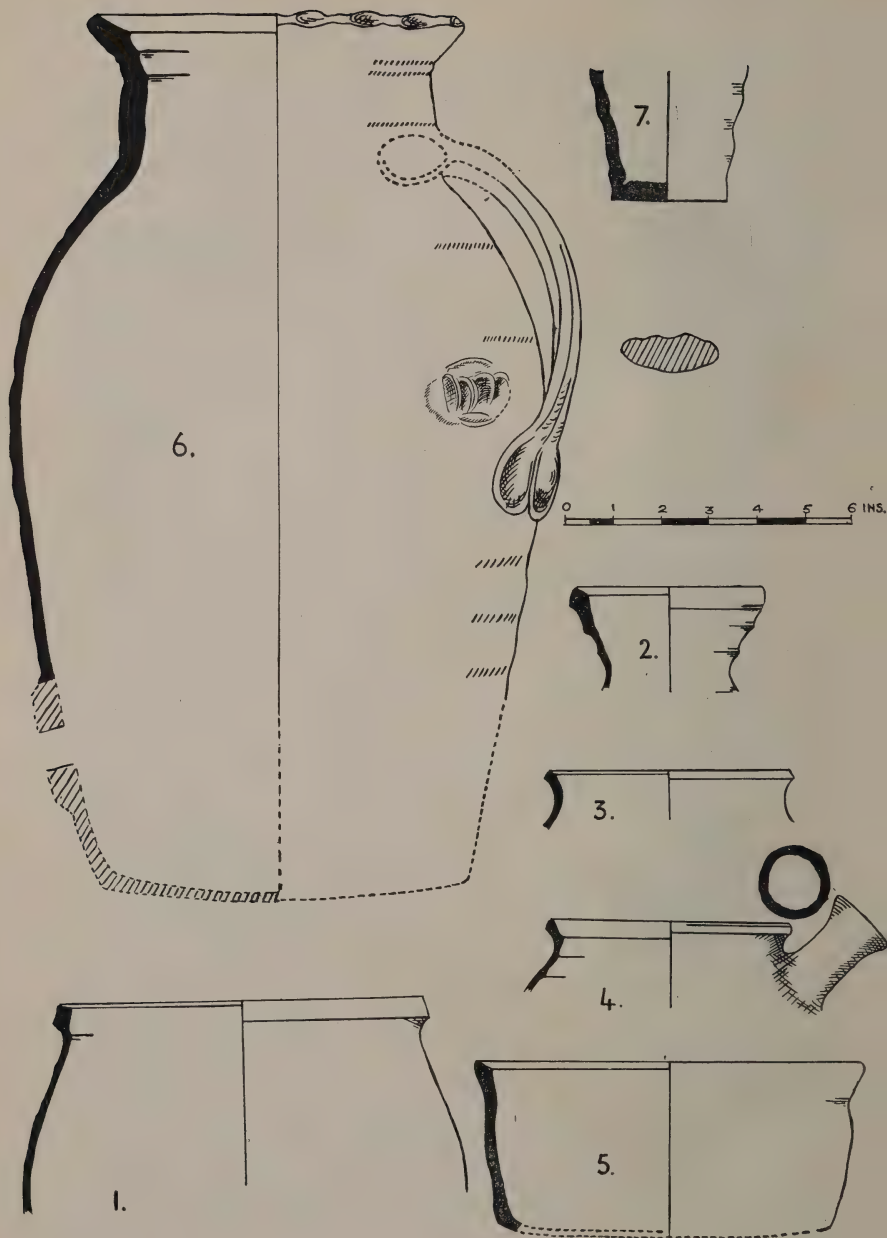


FIG. 24. POTTERY FROM KITCHEN AND CLOISTER. Scale  $\frac{1}{4}$ .

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